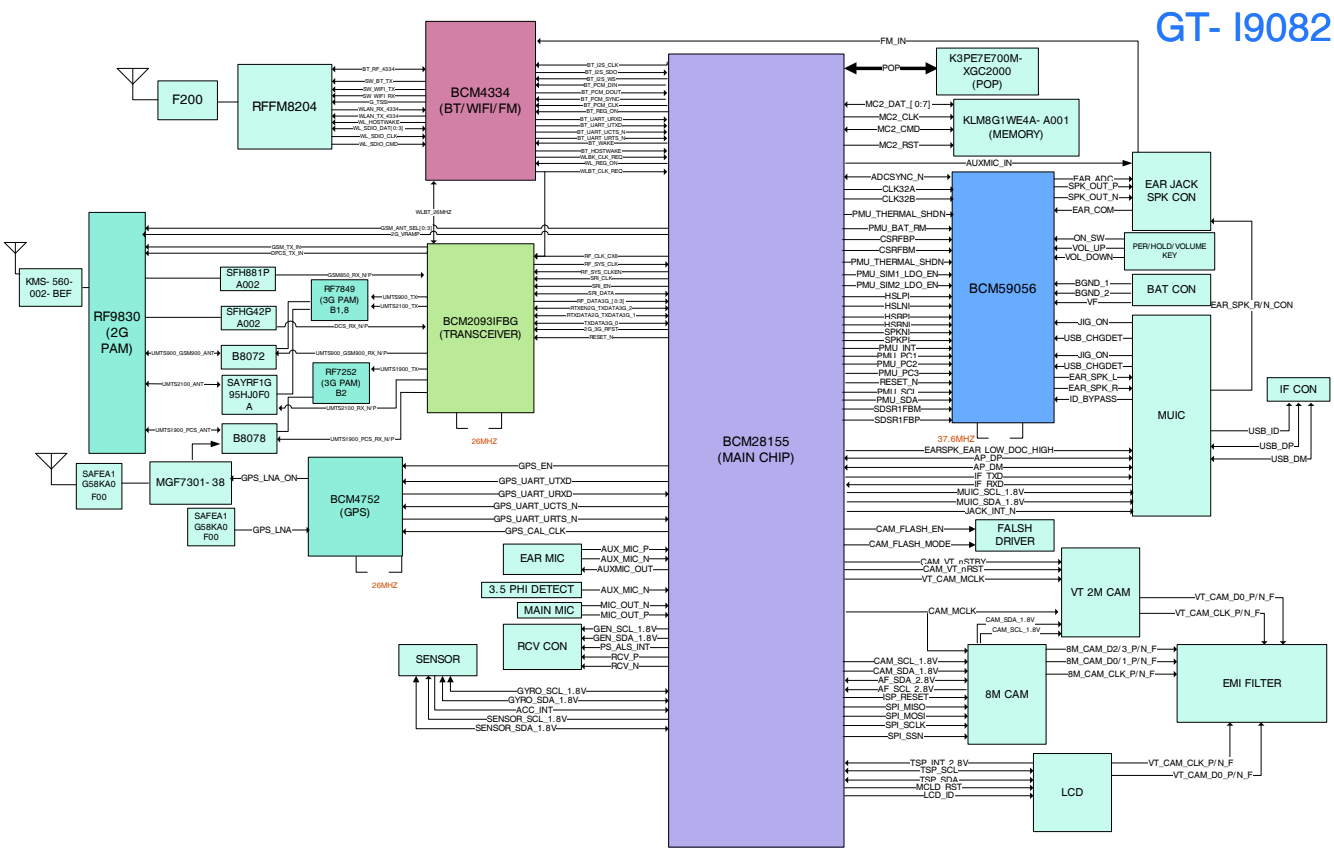
8. Level 3 Repair

8-1. Block Diagram



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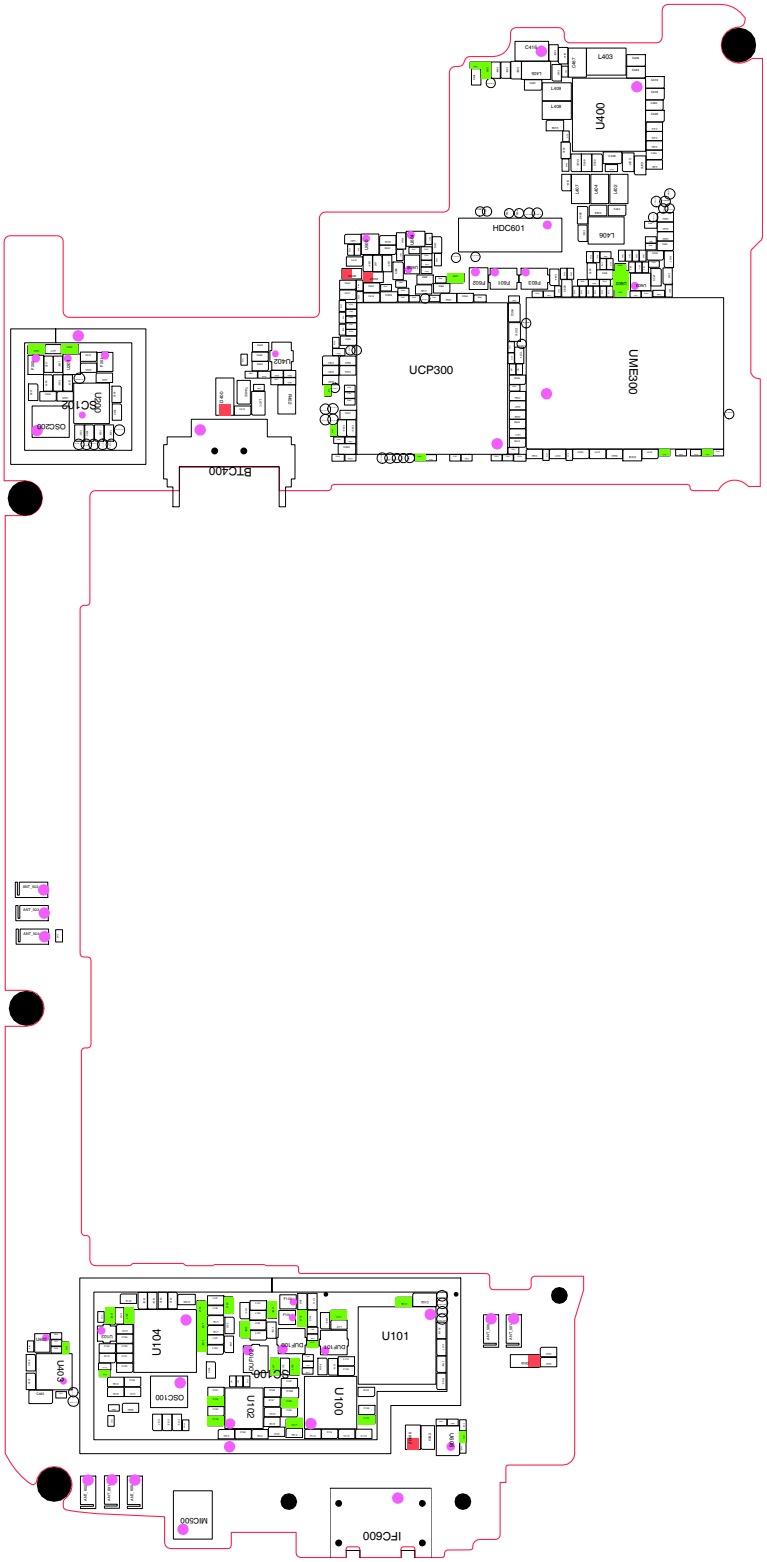
8-2. PCB Diagrams

8-2-1. Top



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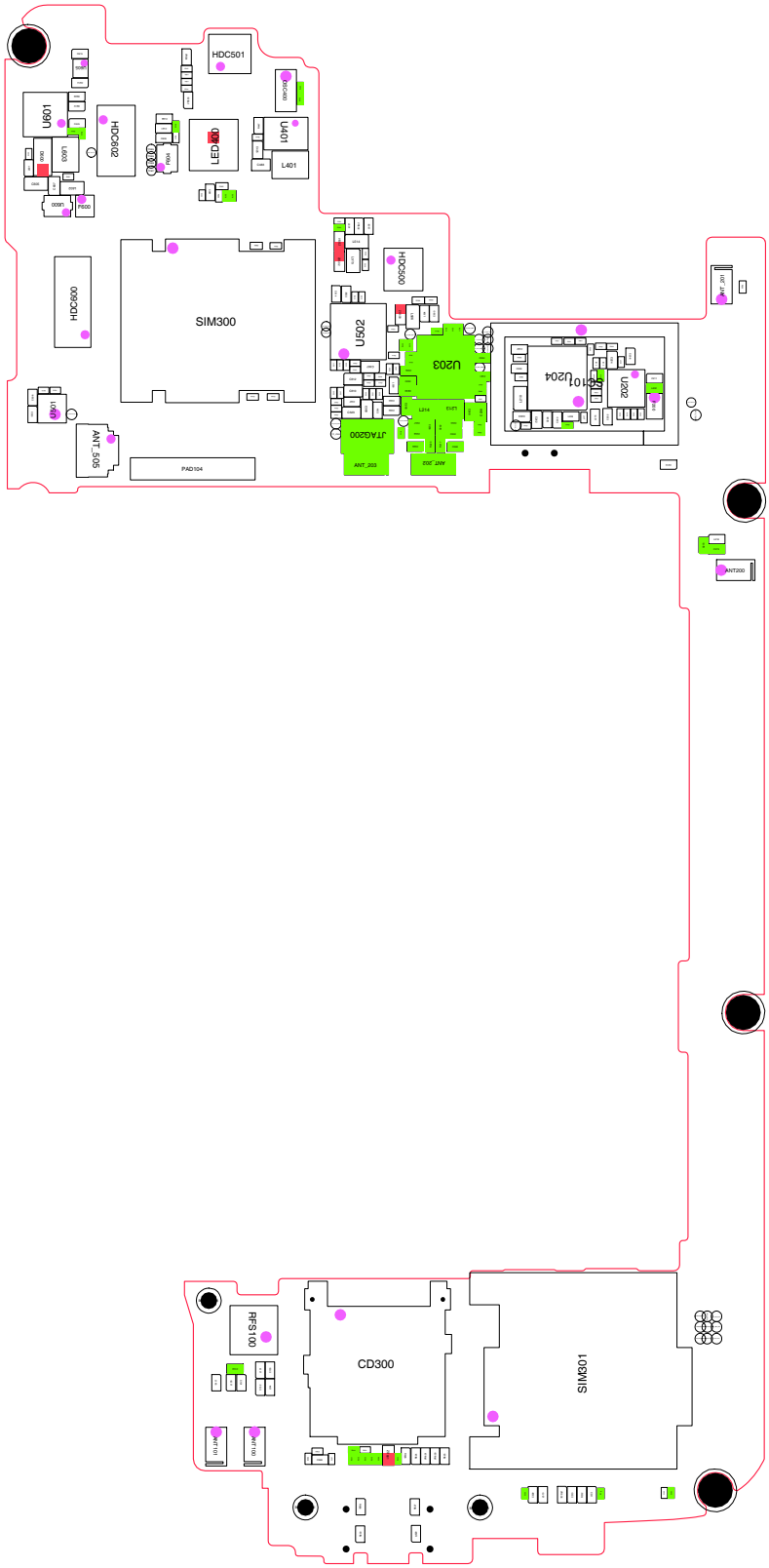
8-2-2. Bottom



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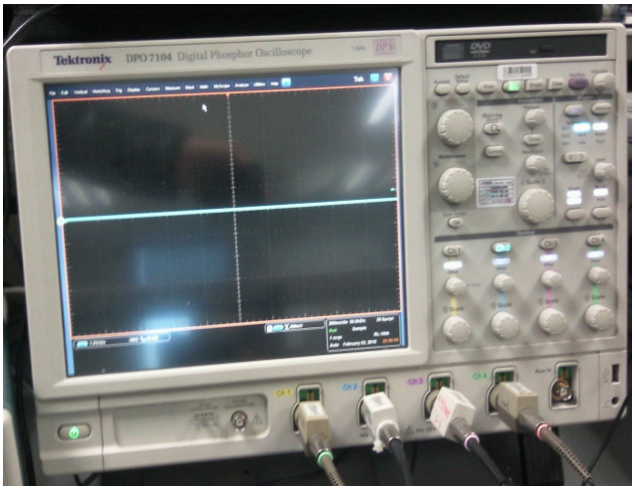
8-3. Flow Chart of Troubleshooting

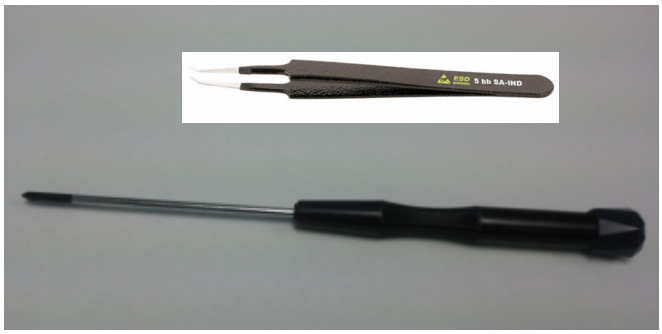
Equipments



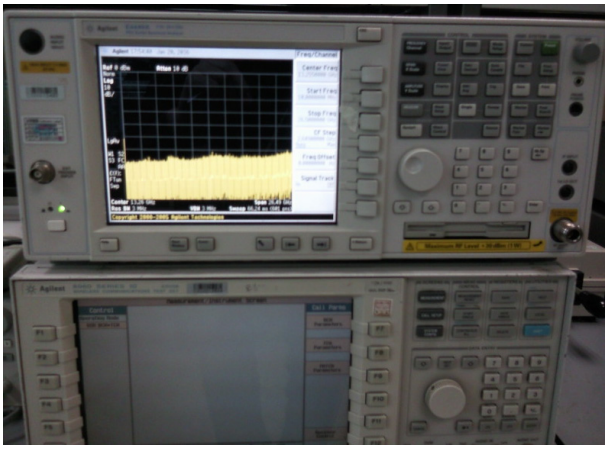
↑ Oscilloscope

↑ Digital Multimeter

↑ Power Supply



↑ + driver, ESD Safe Tweezer



↑ 8960 & Spectrum Analyzer

↑ Soldering iron

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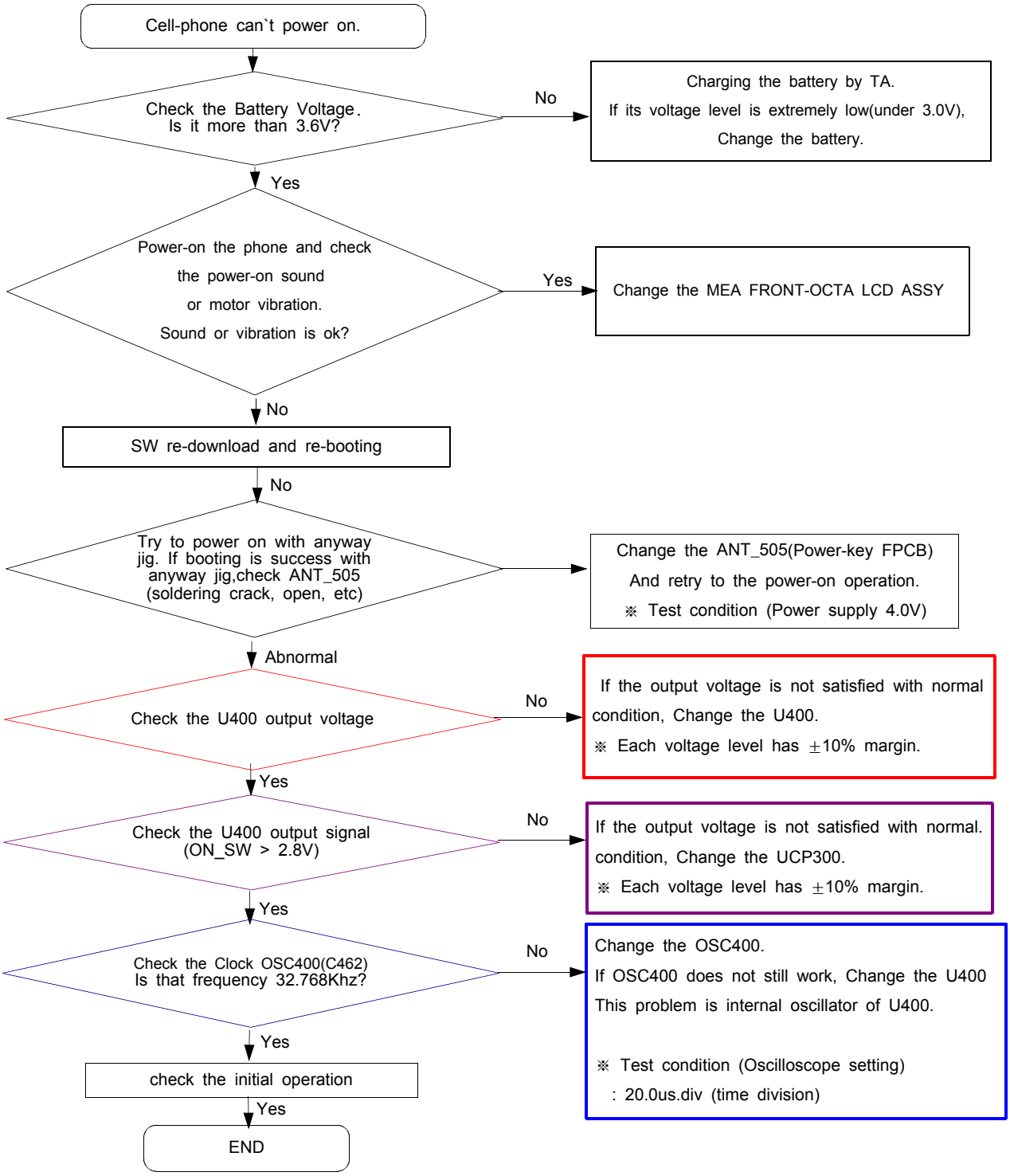
8-3-1. Power On



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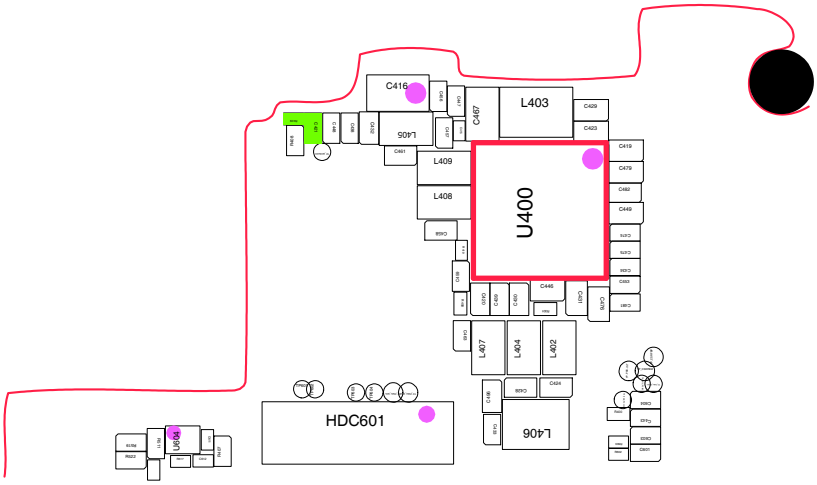

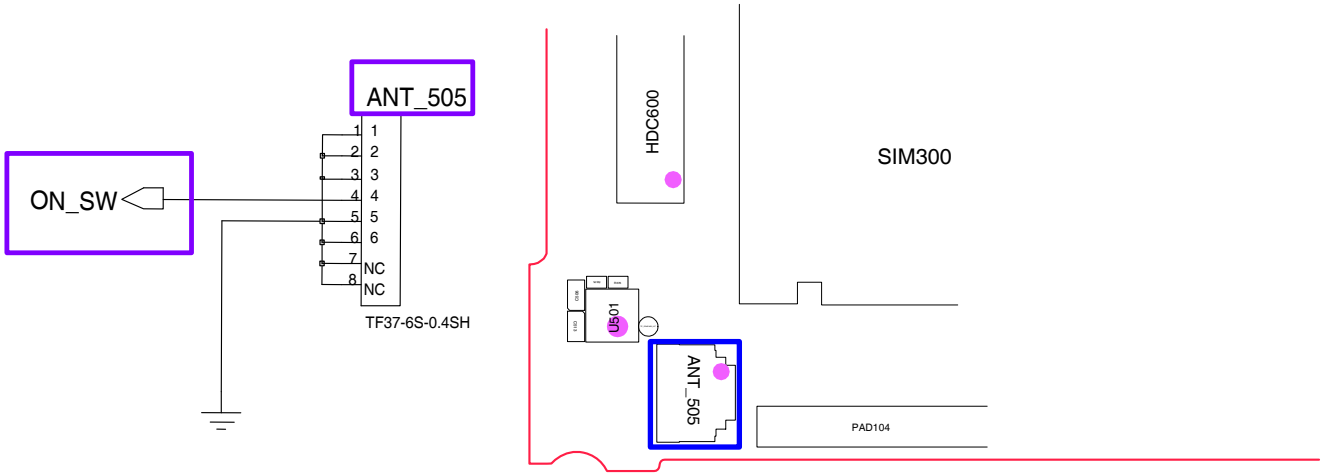

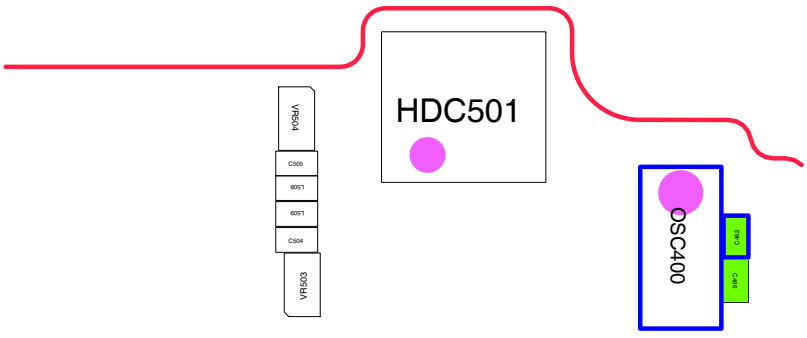

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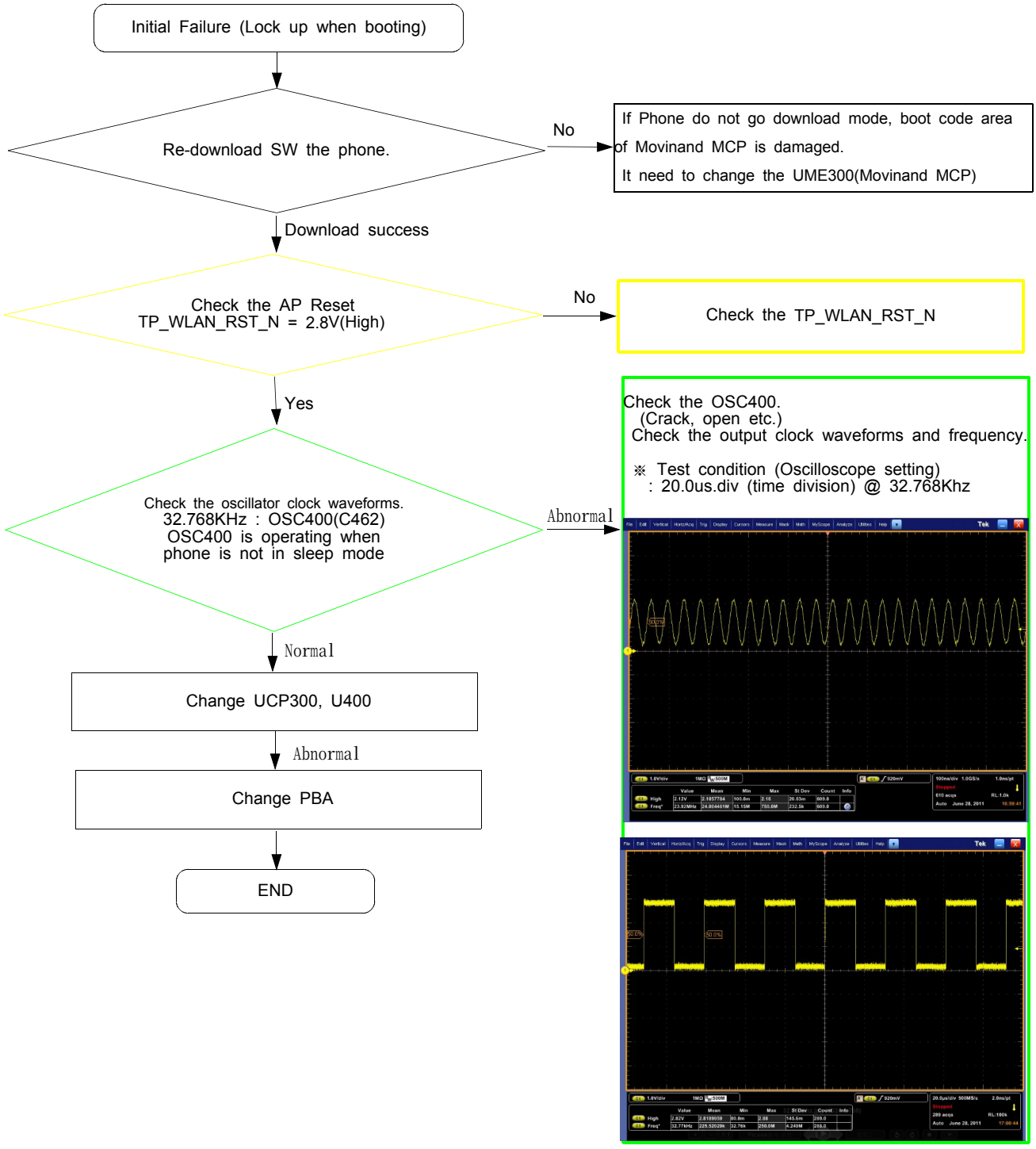
8-3-2. Initial (Lock up)



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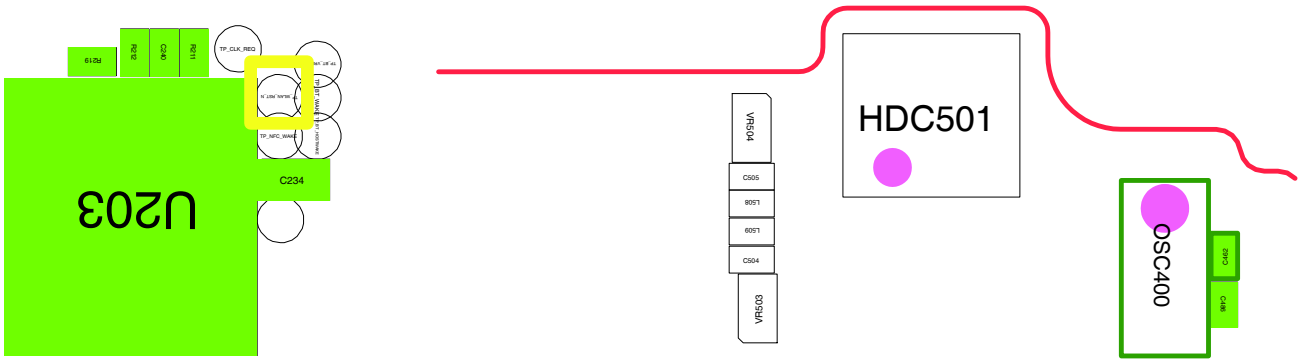

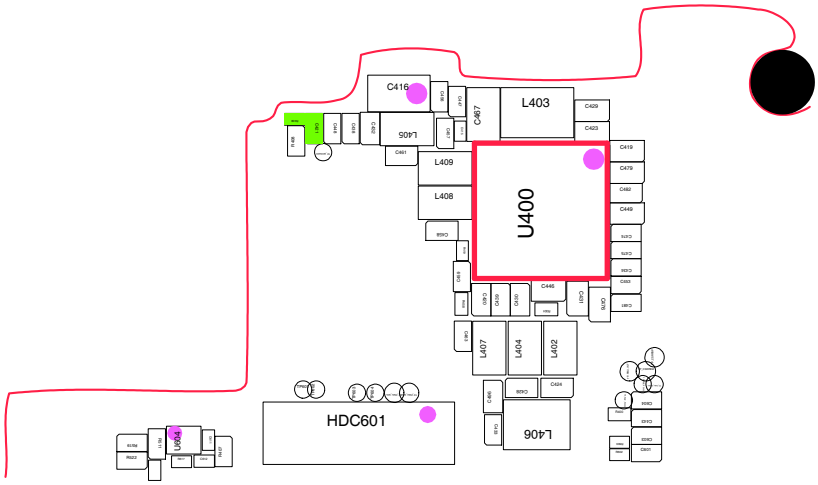

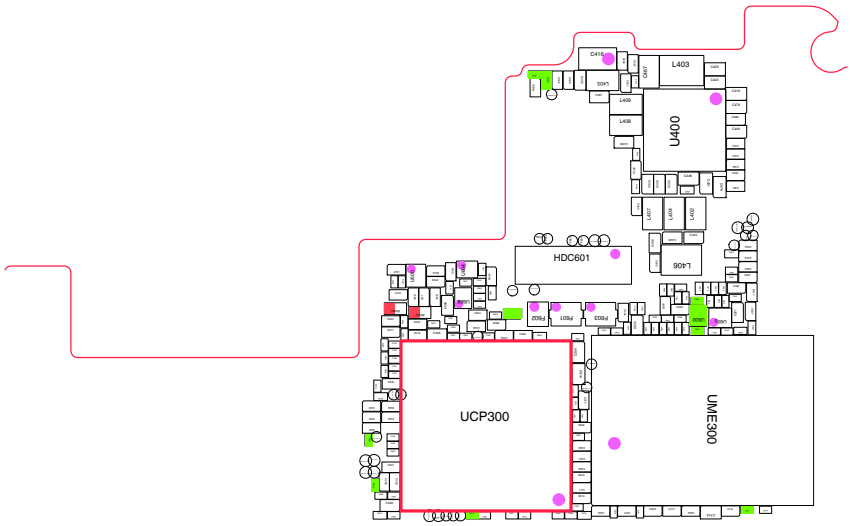

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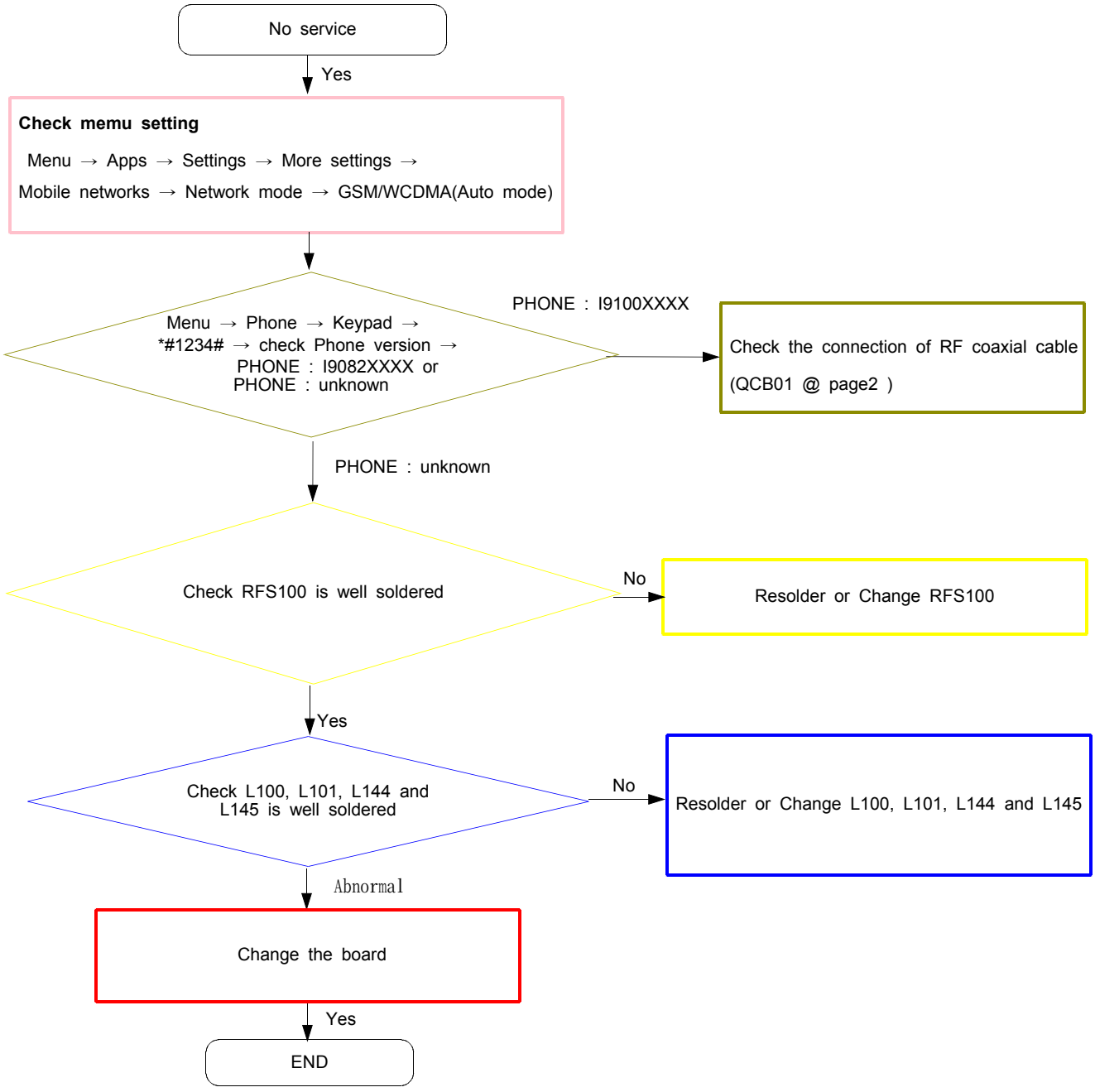
8-3-3. No Service



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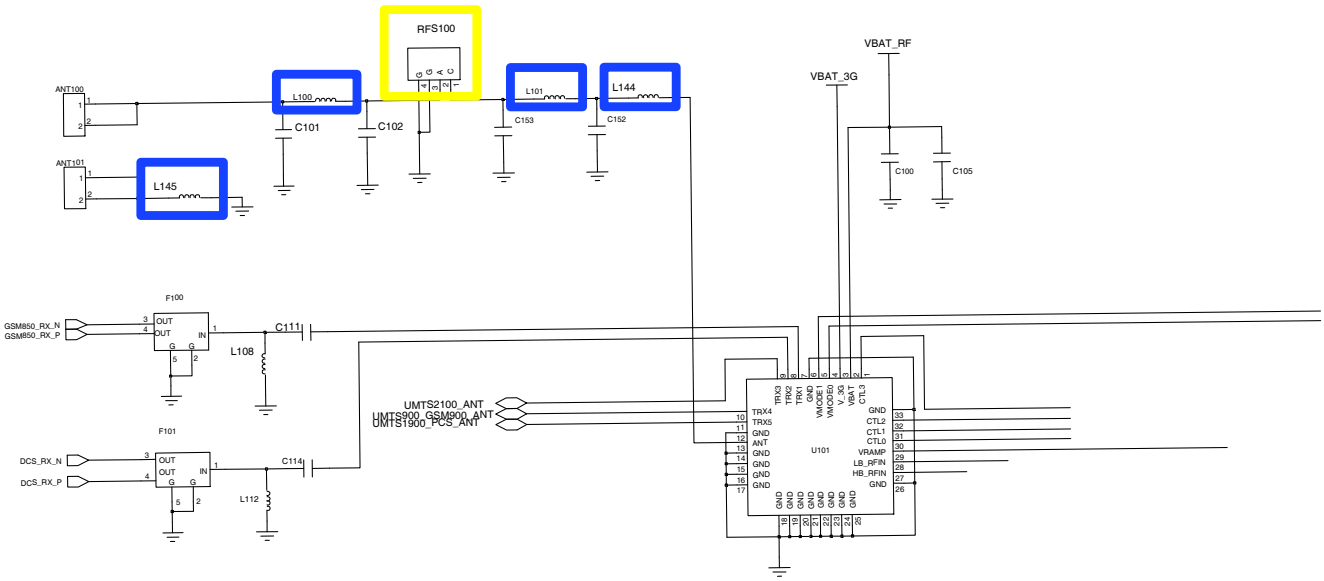

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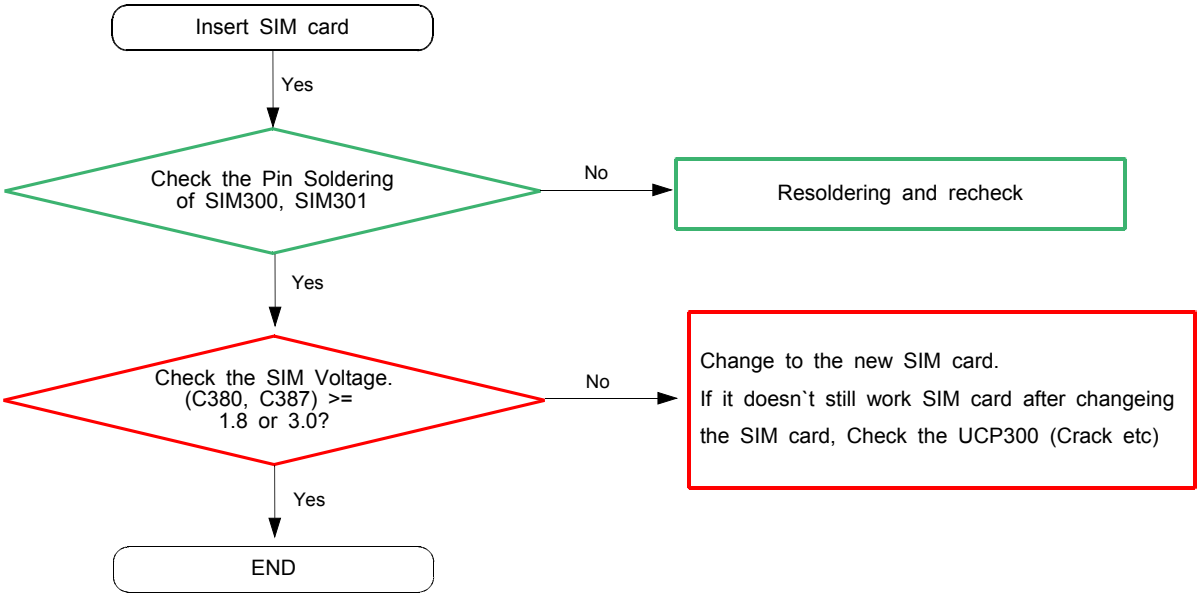
8-3-4. Sim Part


Insert SIM card
Yes
Check the Pin Soldering of SIM300, SIM301
No
Resoldering and recheck
Yes
Check the SIM Voltage. (C380, C387) >= 1.8 or 3.0?
No
Change to the new SIM card.
If it doesn`t still work SIM card after changeing the SIM card, Check the UCP300 (Crack etc)
Yes
END

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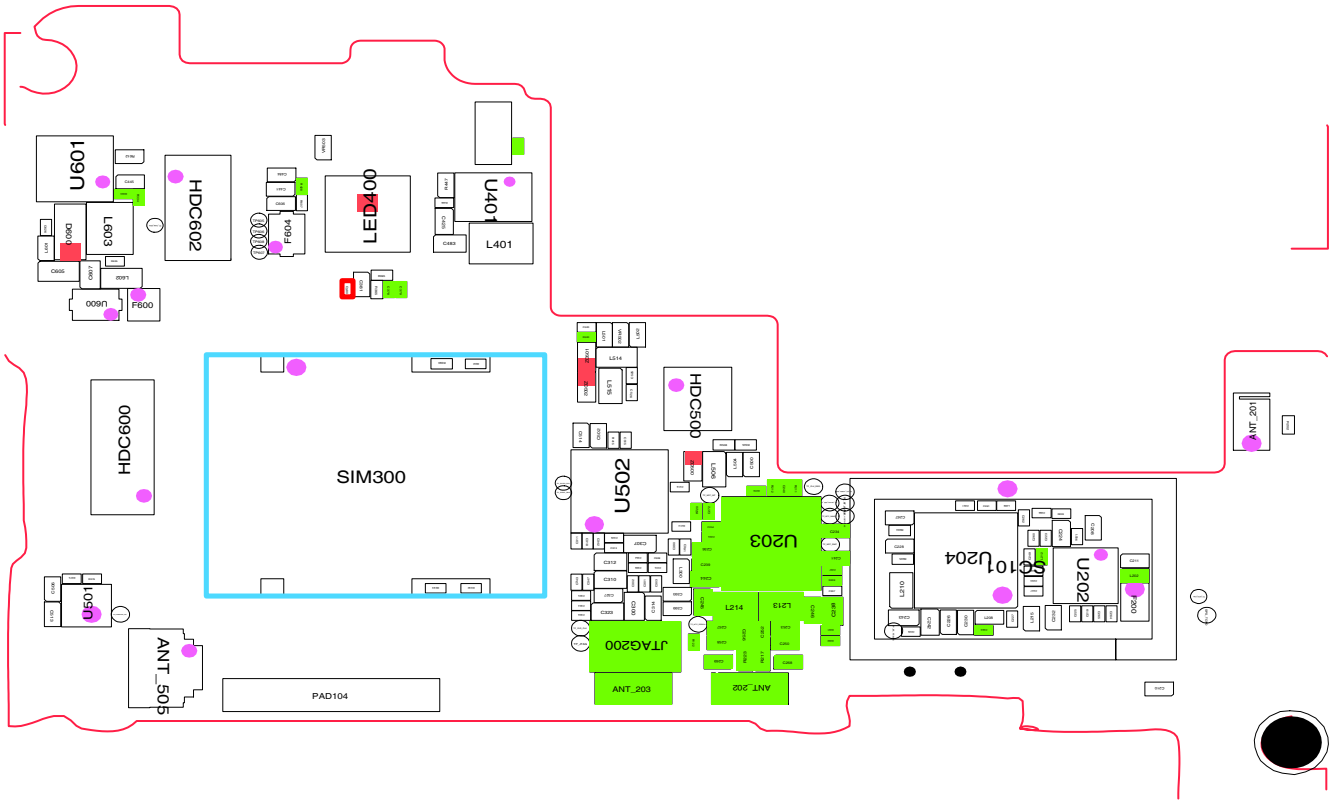

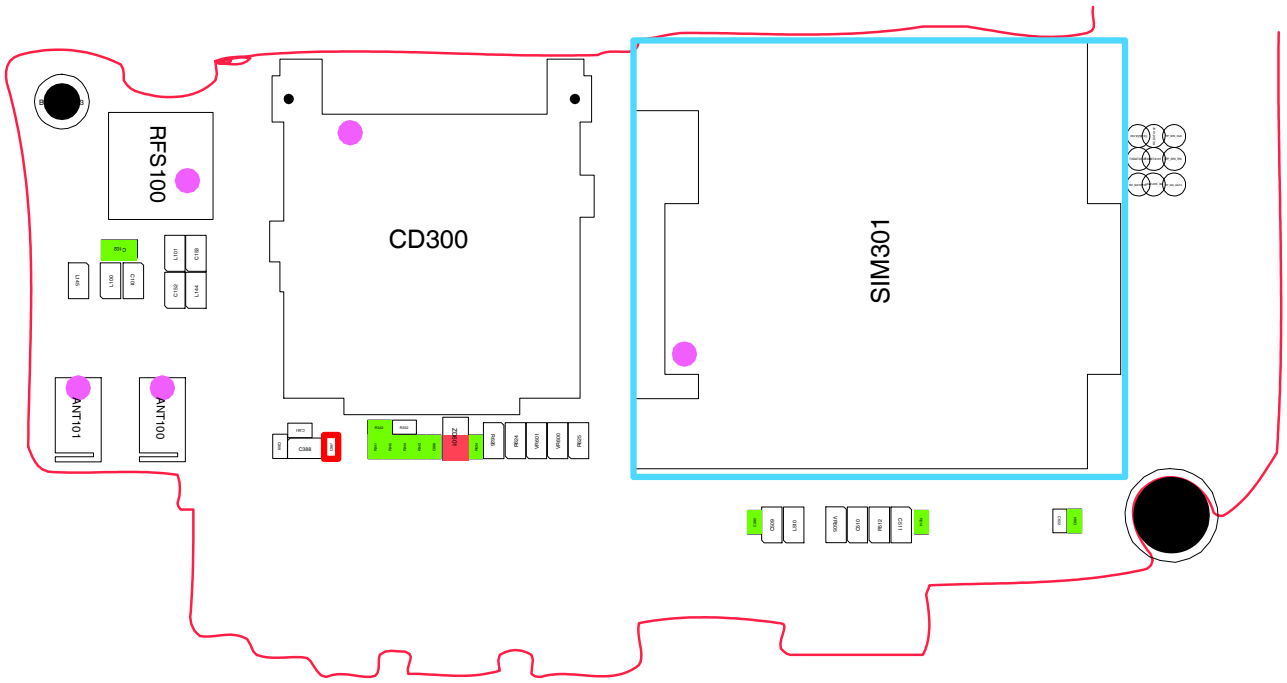

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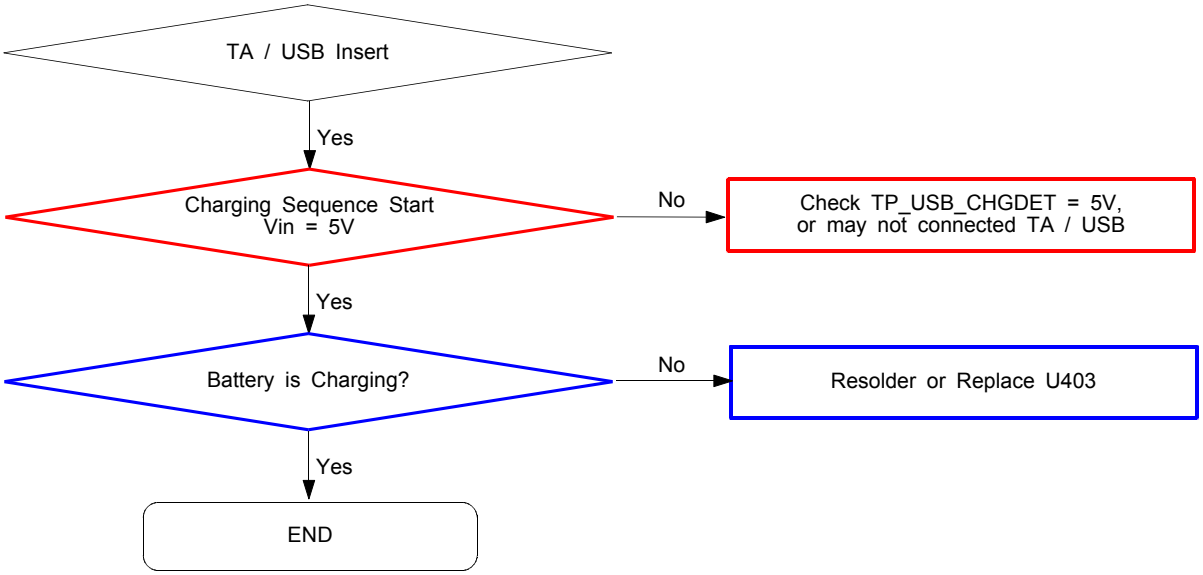
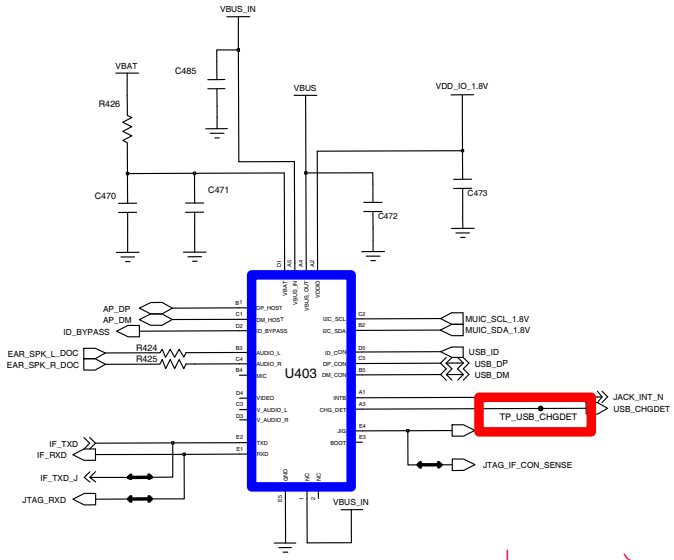
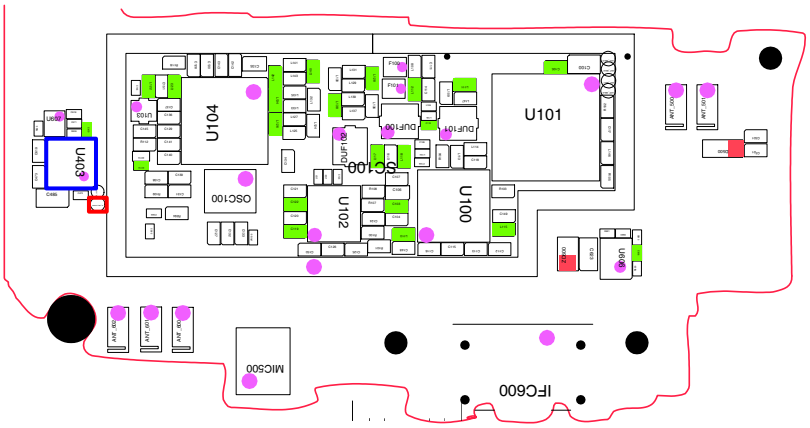
8-3-5. Charging Part







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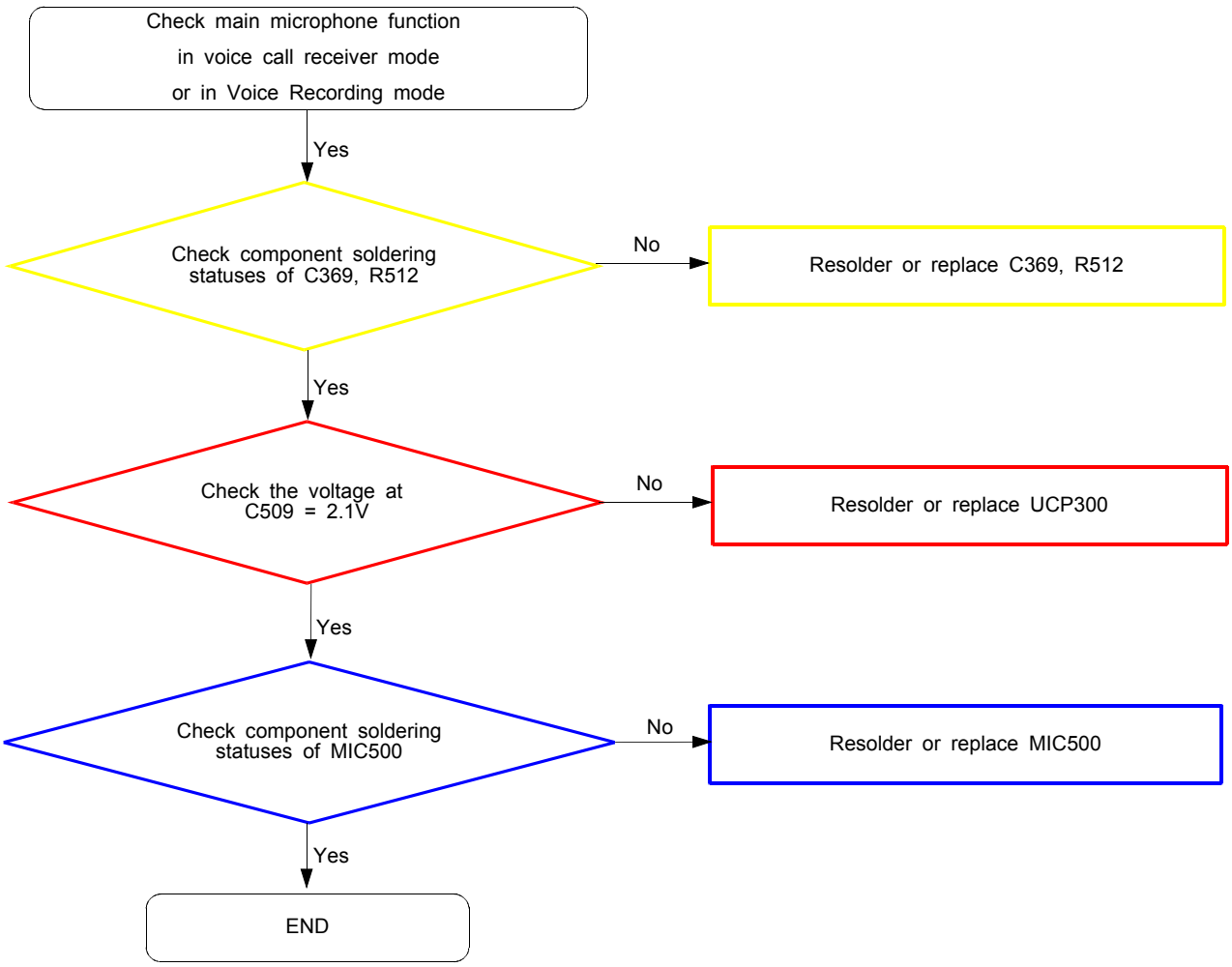
8-3-6. Microphone Part (Main MIC)



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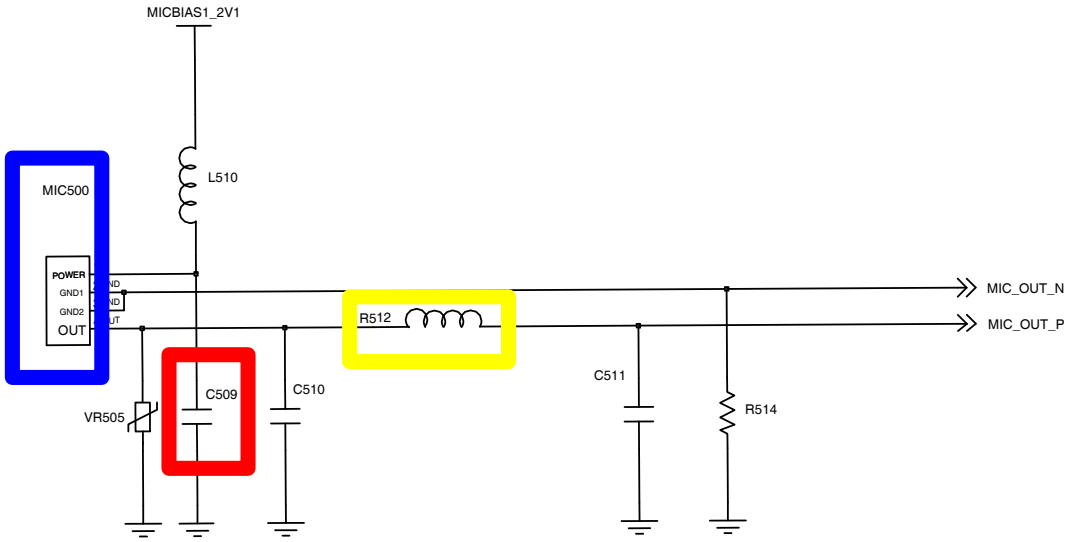
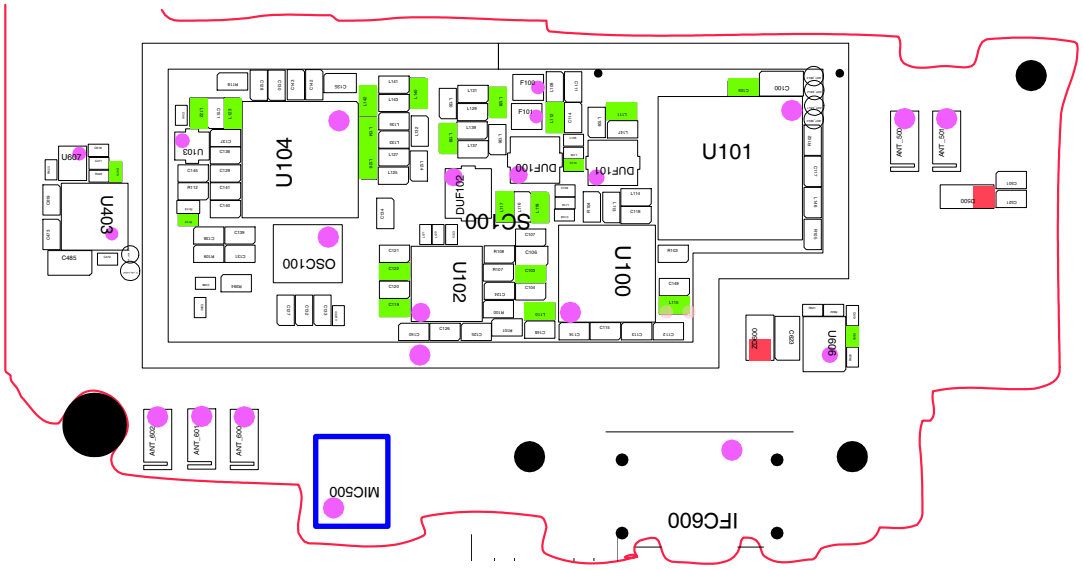


MAIN MIC



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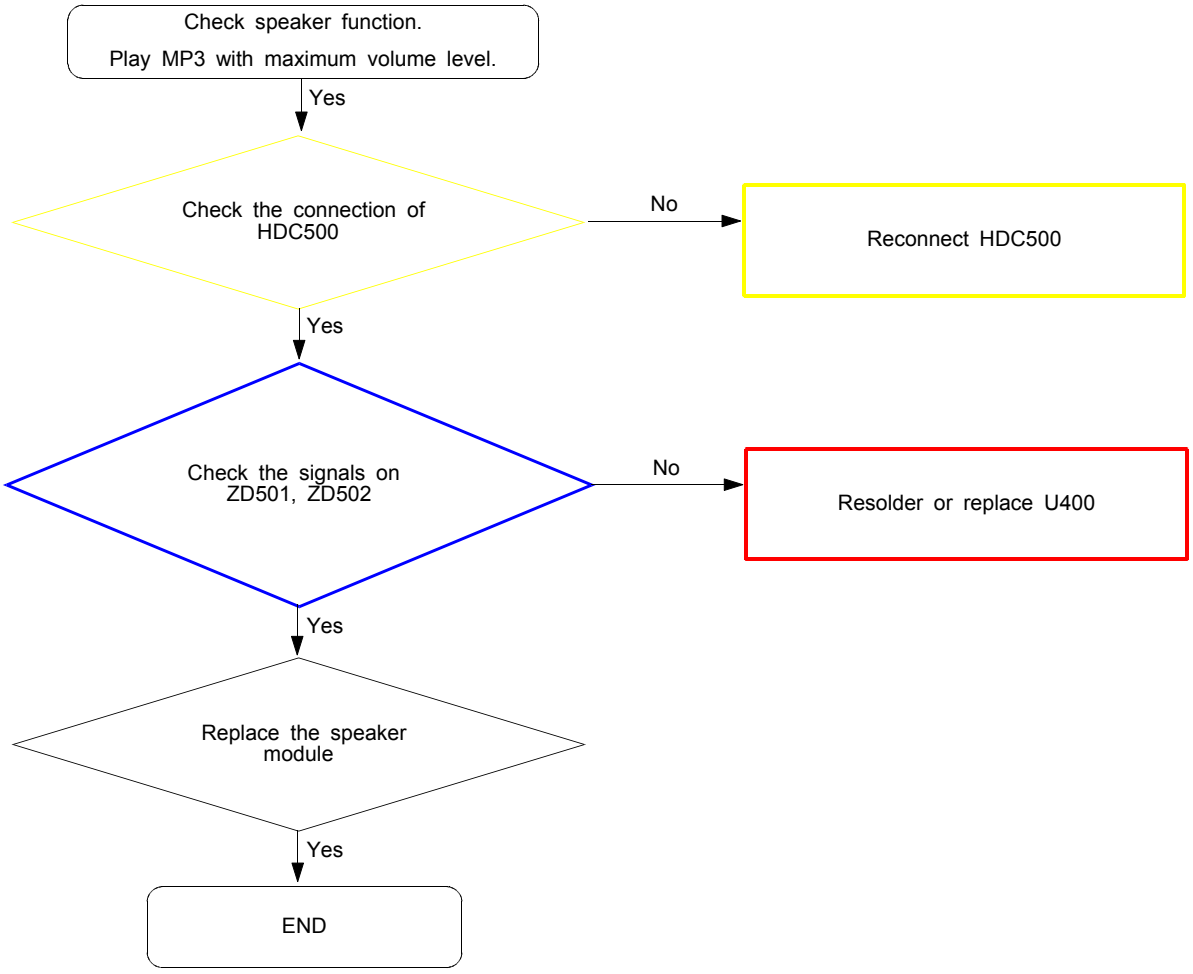
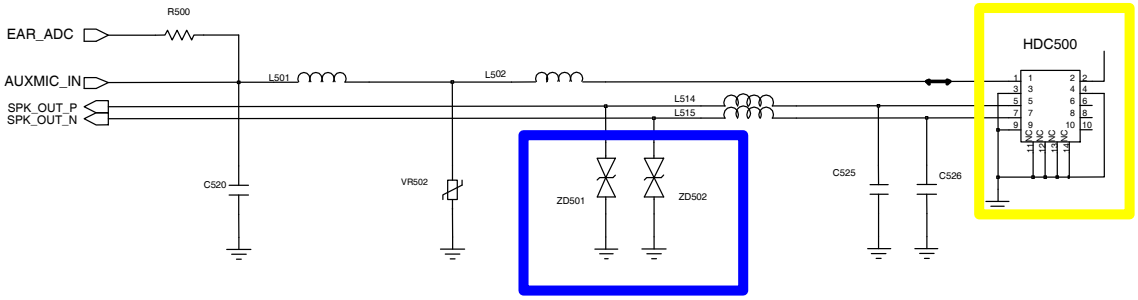
8-3-7. Speaker Part





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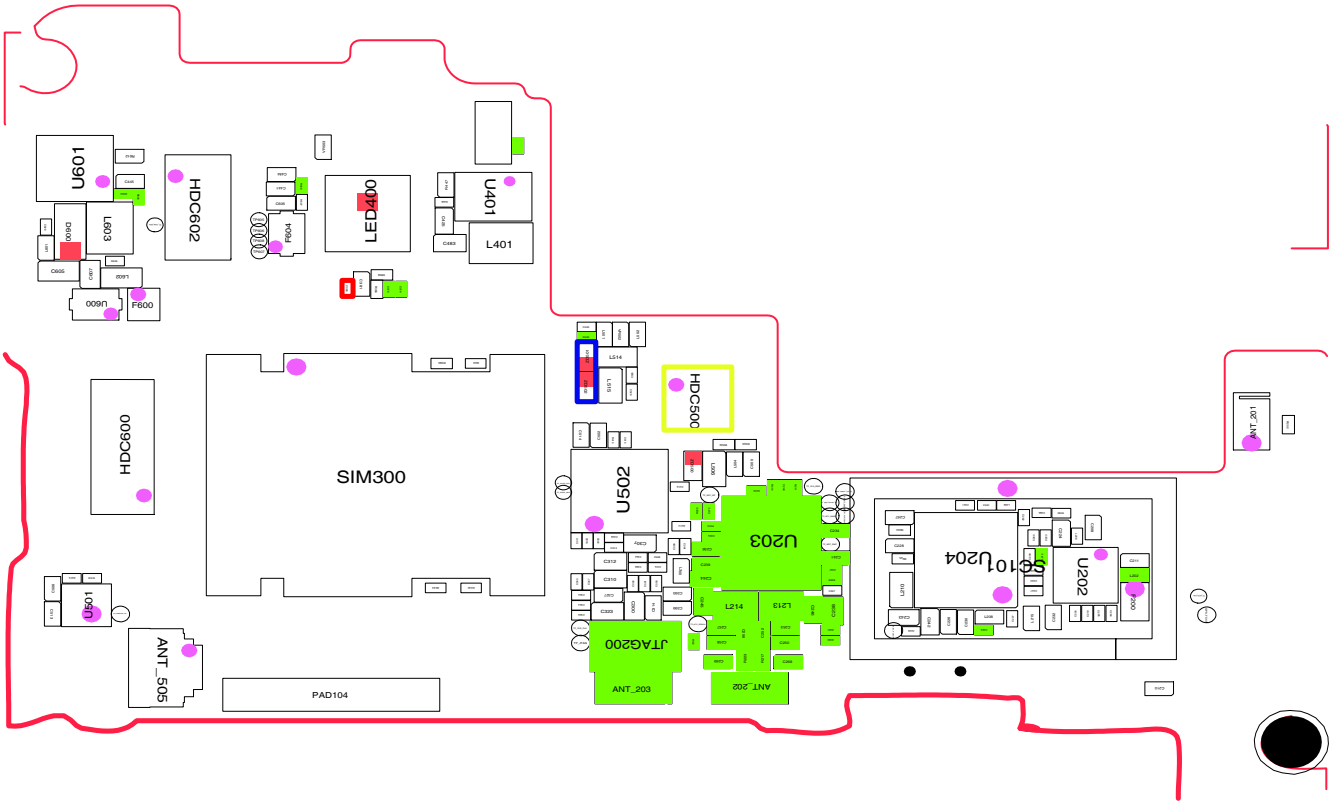

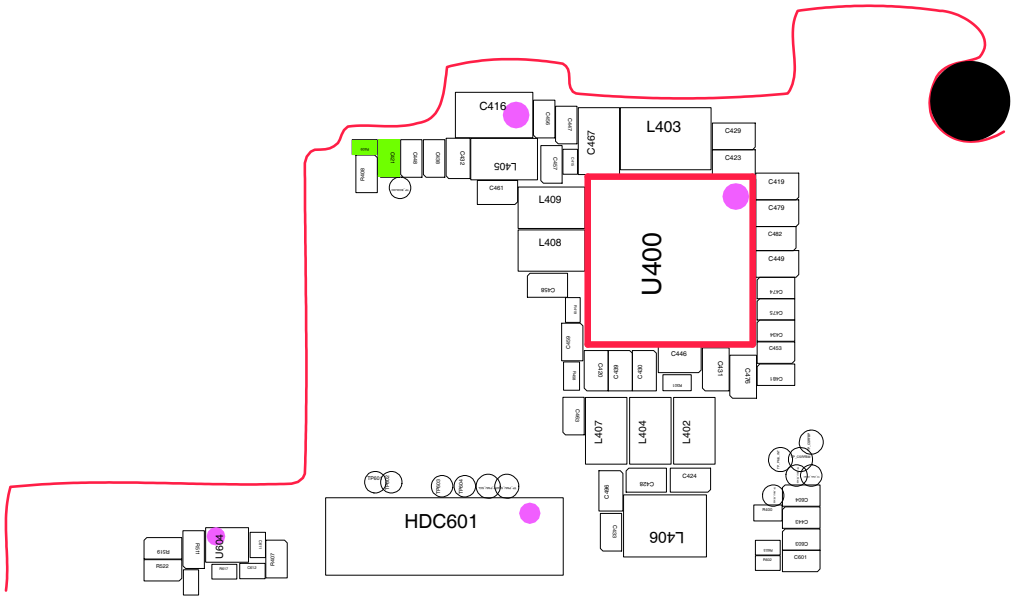

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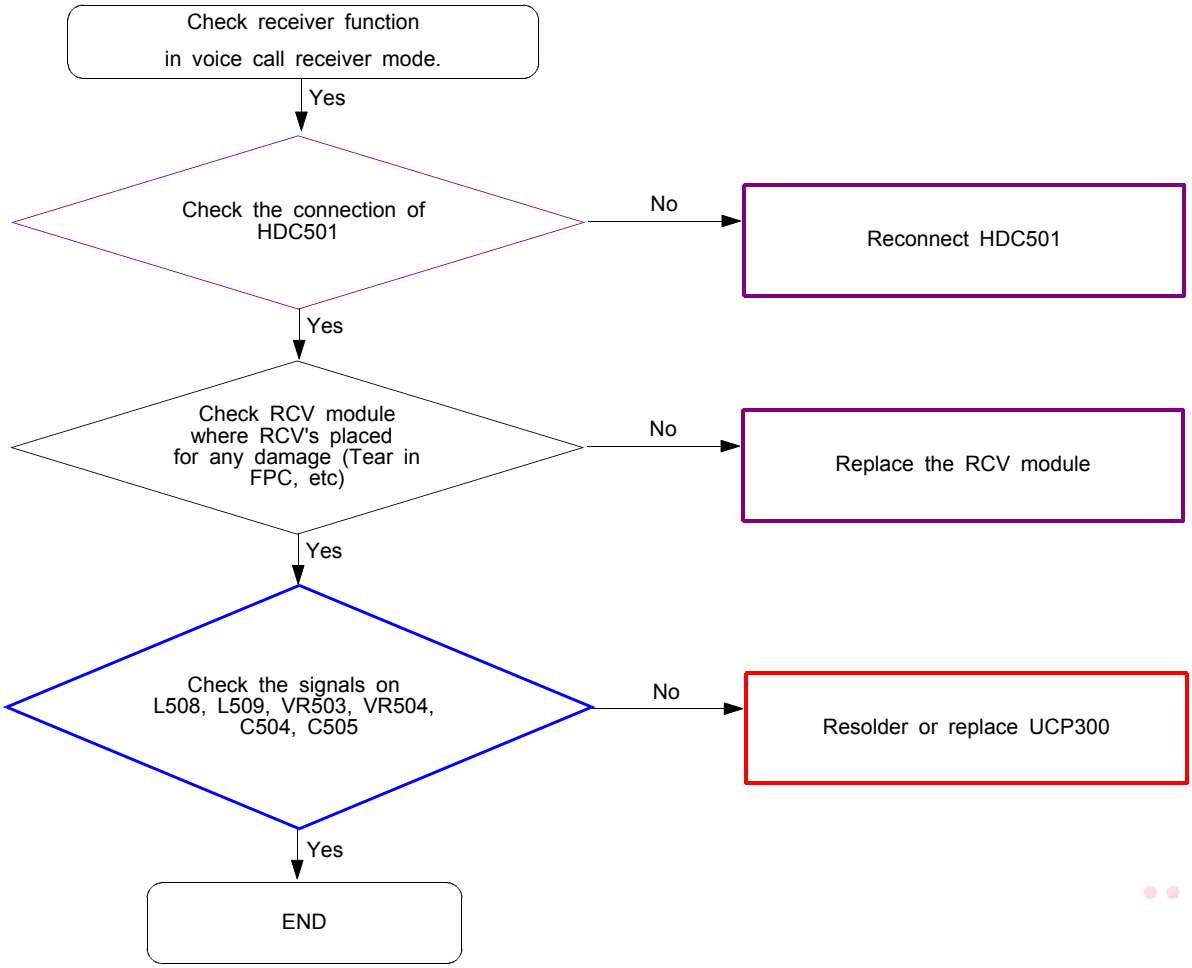
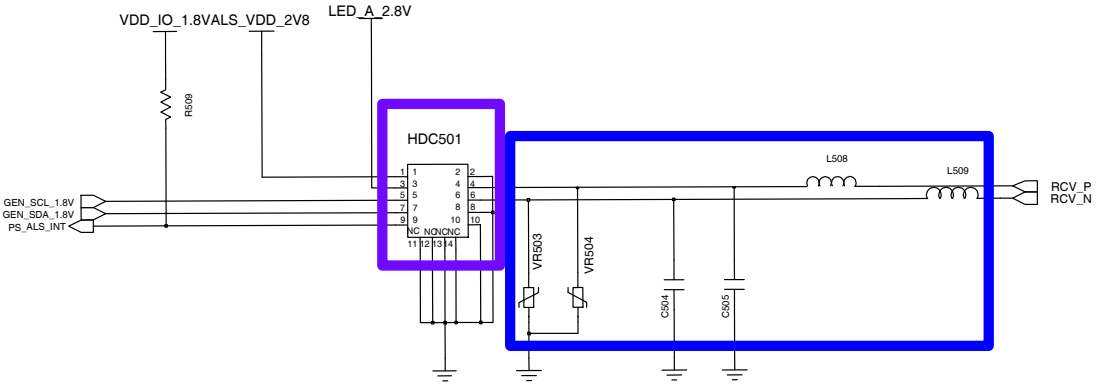
8-3-8. Receiver Part





RCV CON

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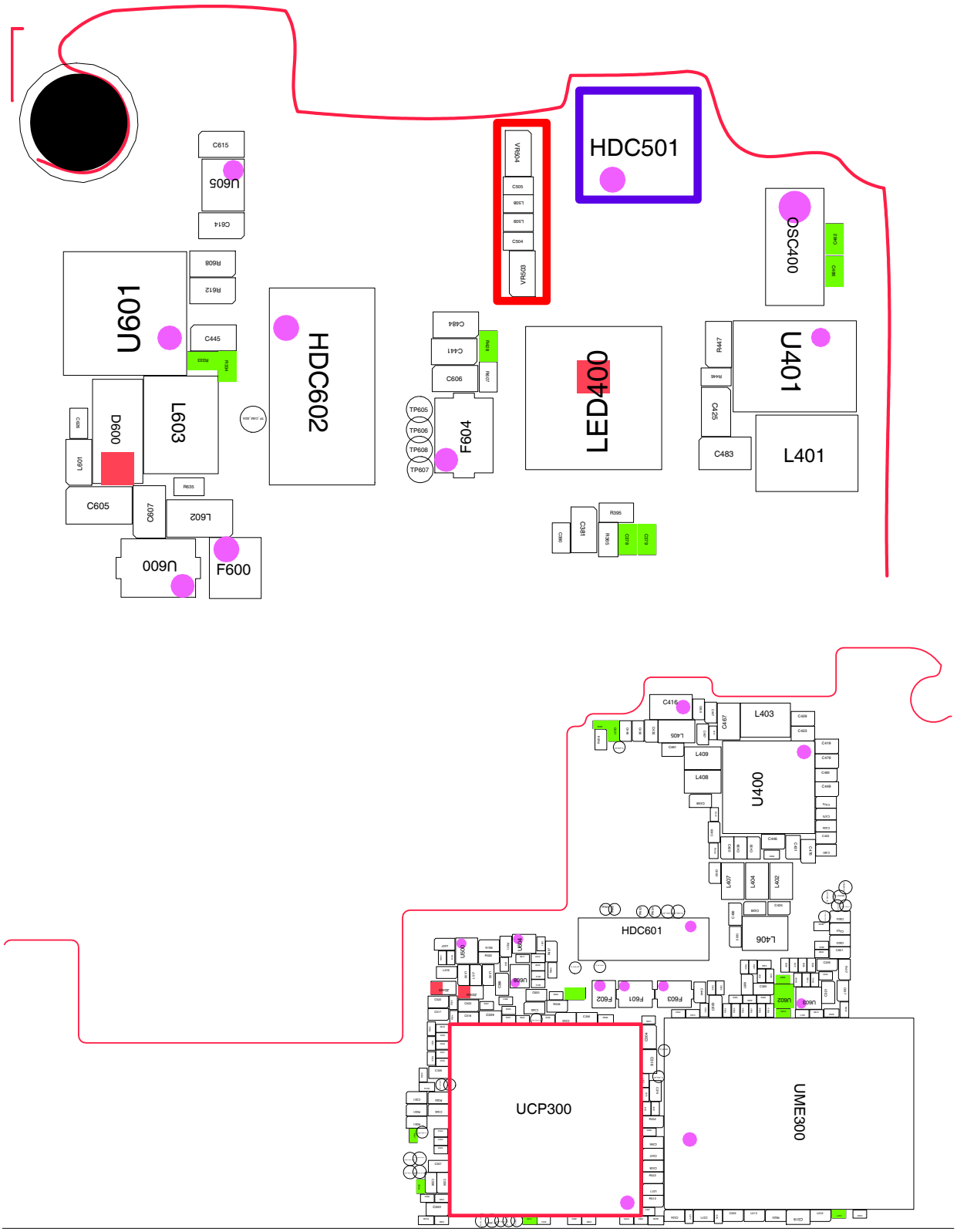

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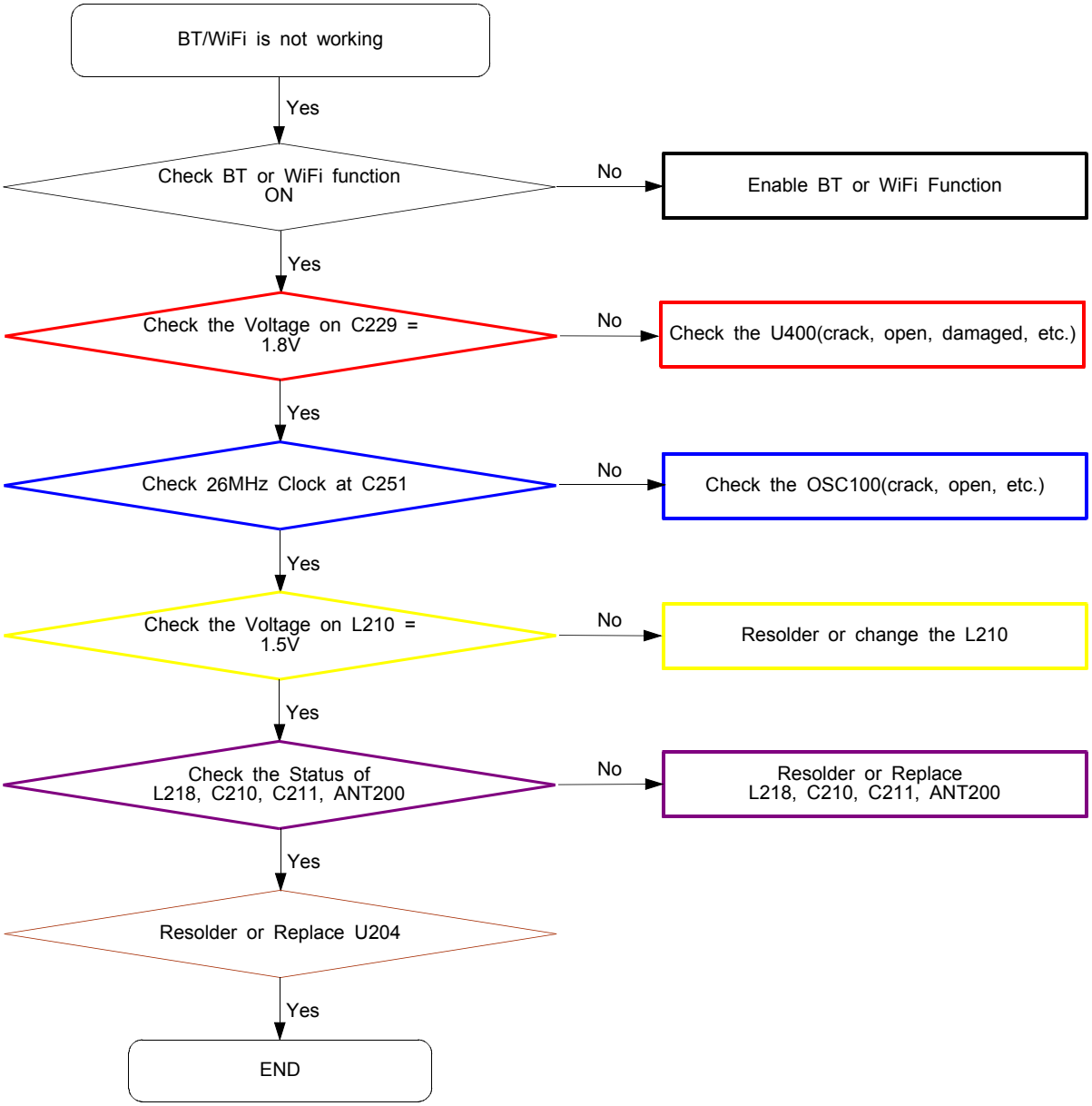
8-3-9. BT/WIFI



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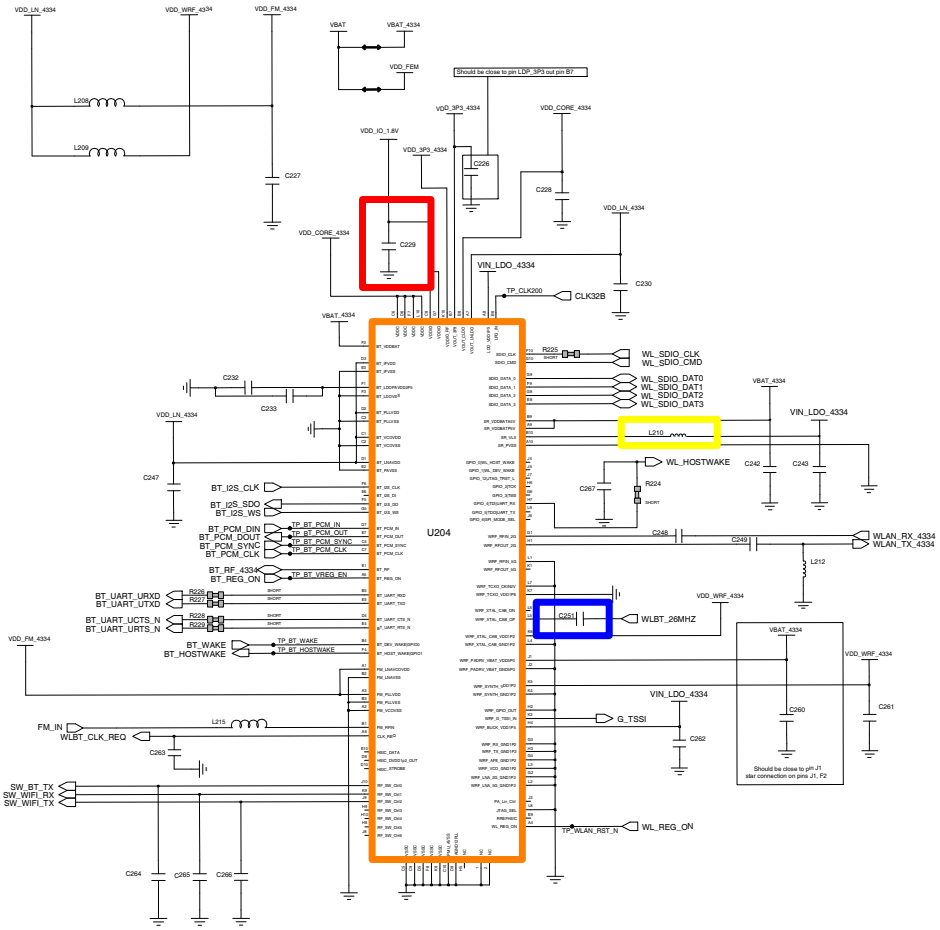
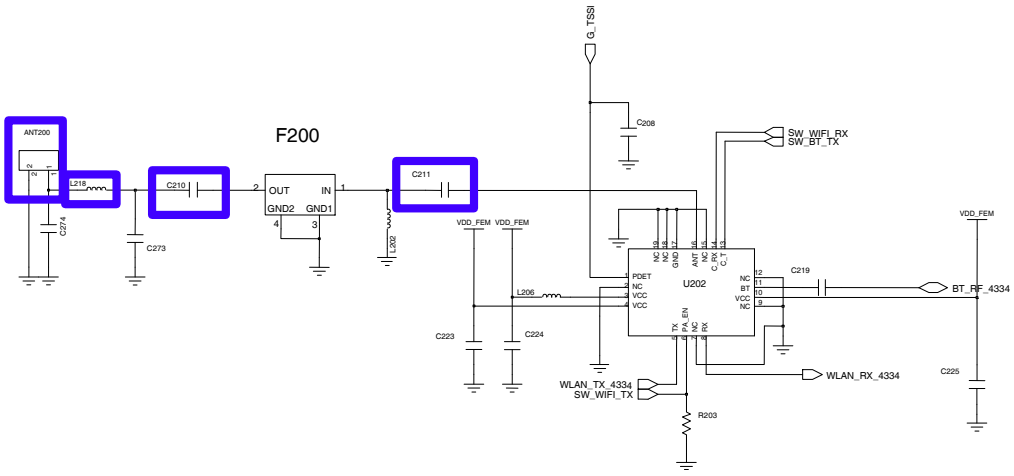


BT/WIFI/FM



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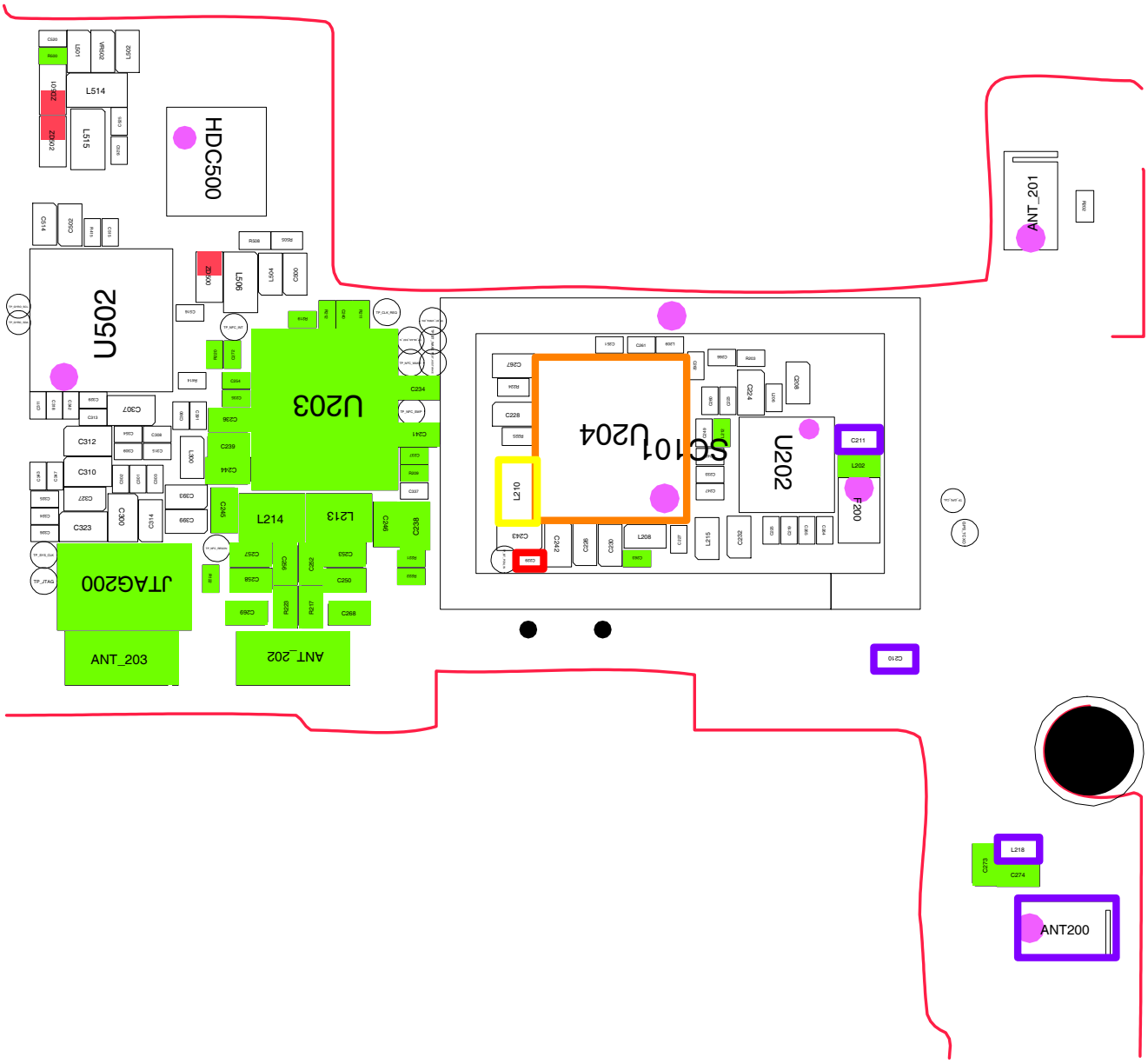

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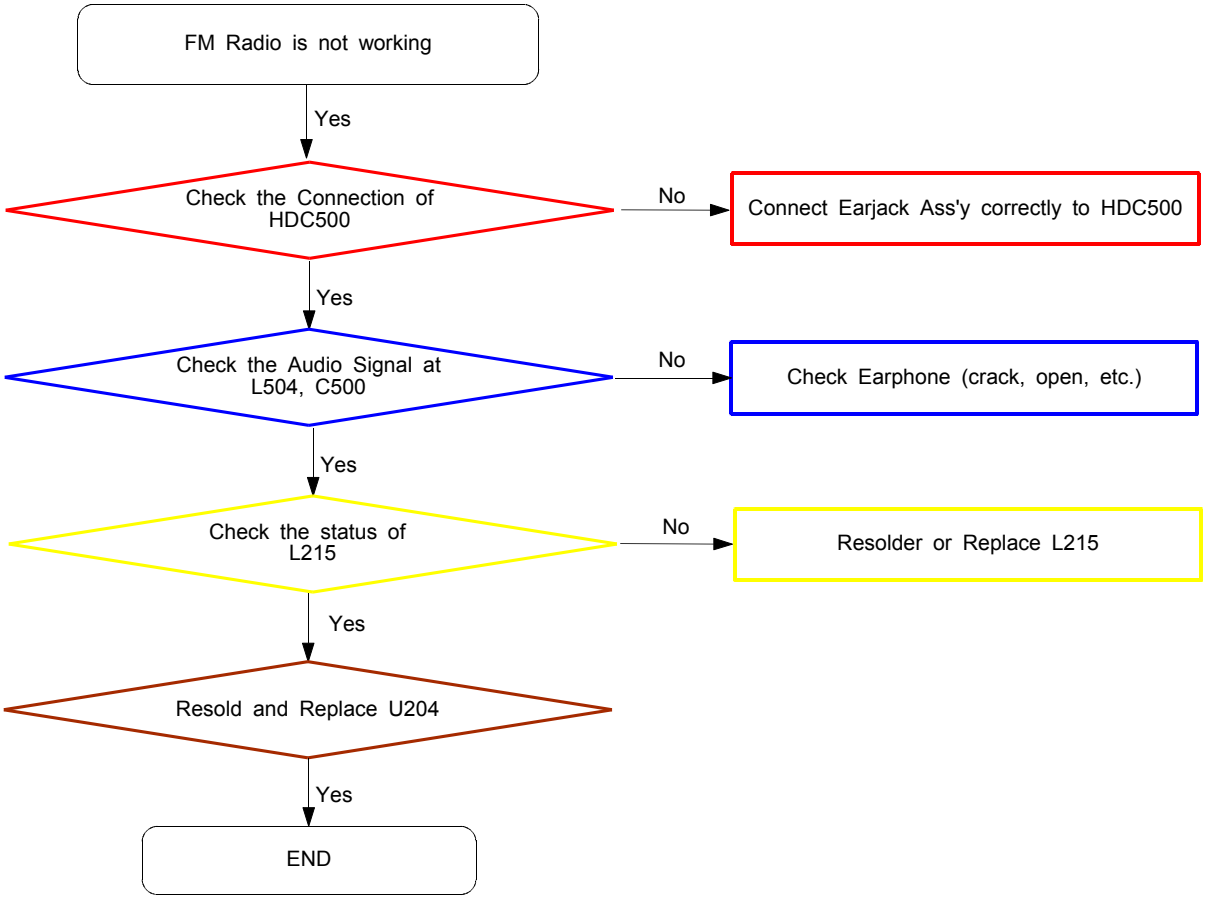
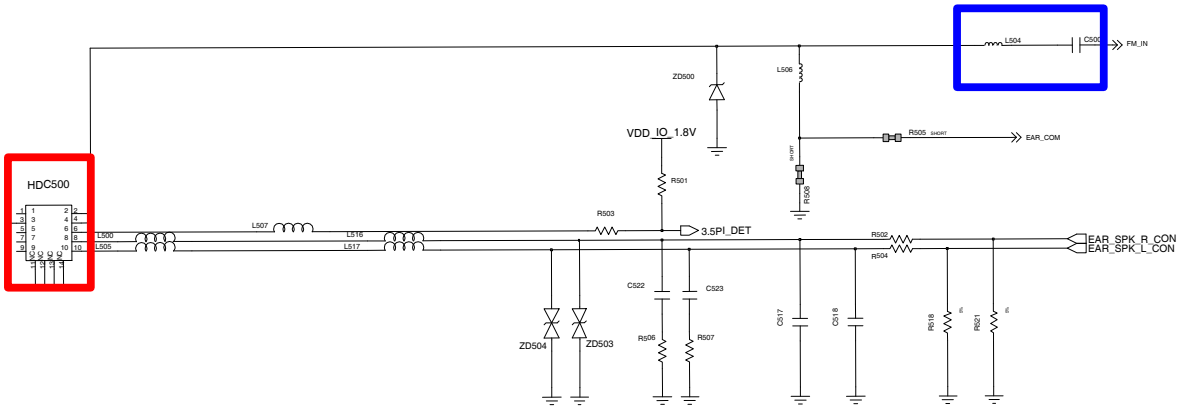
8-3-10. FM RADIO





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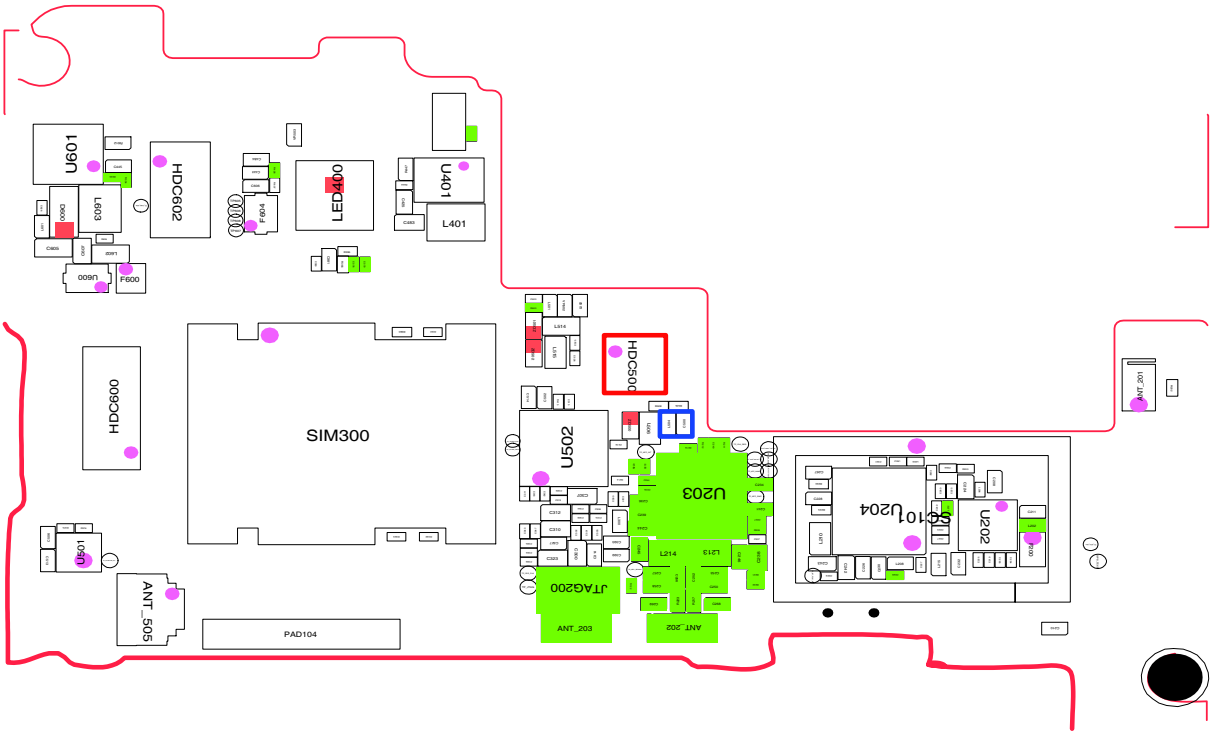

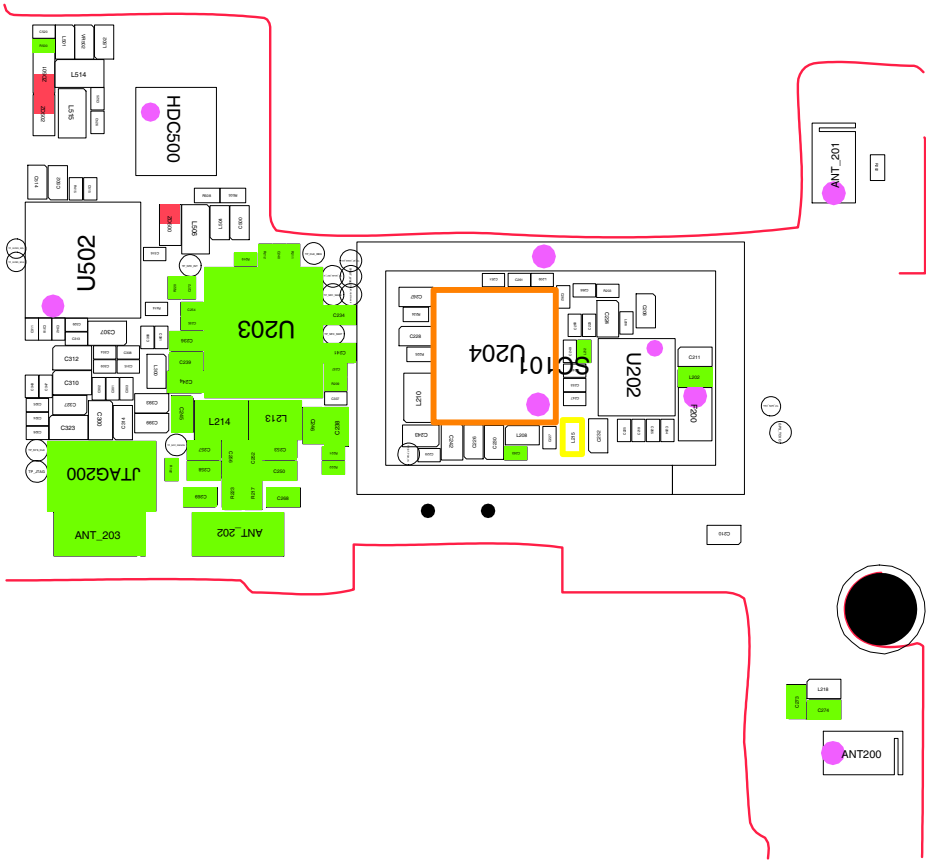

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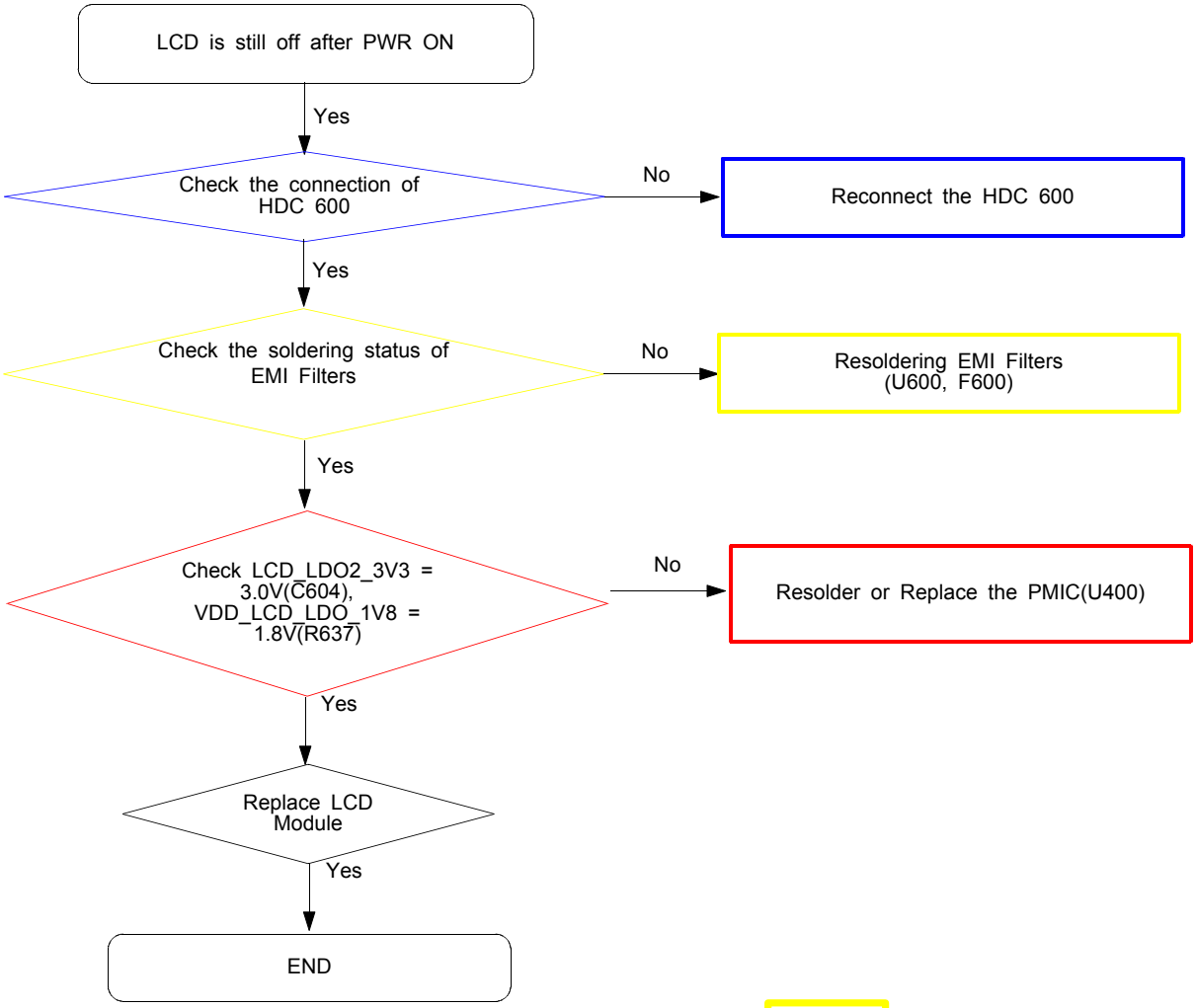
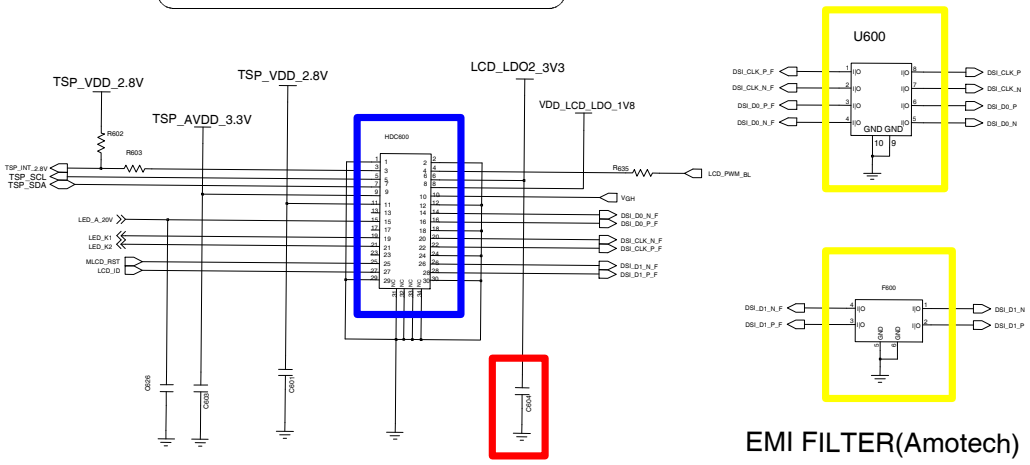
8-3-11. LCD





SMD LCD 5.01" WVGA PLS WITH TSP CON

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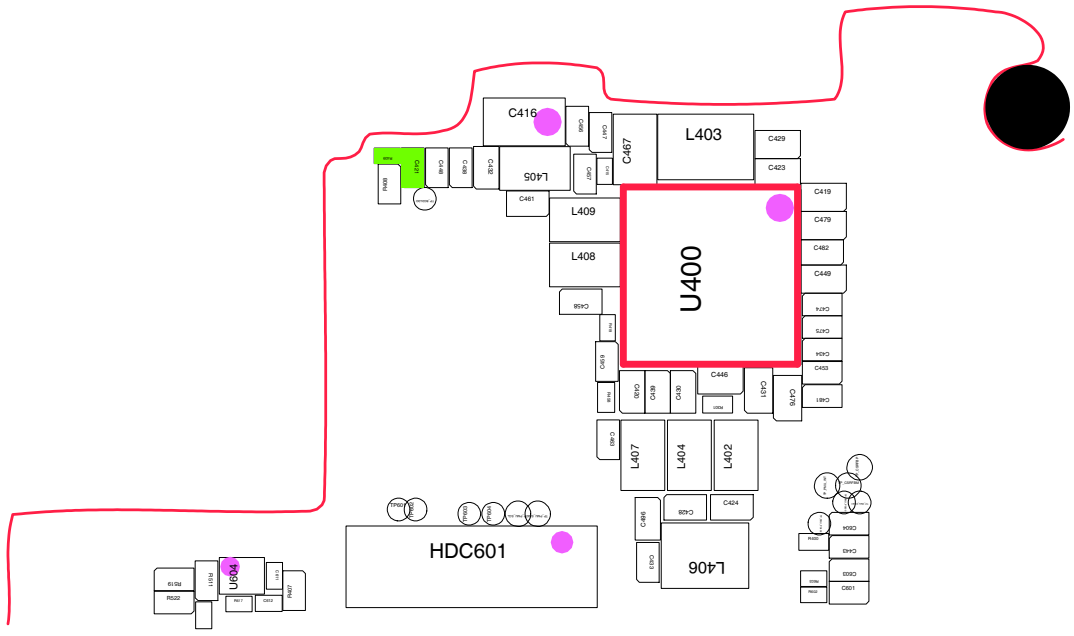

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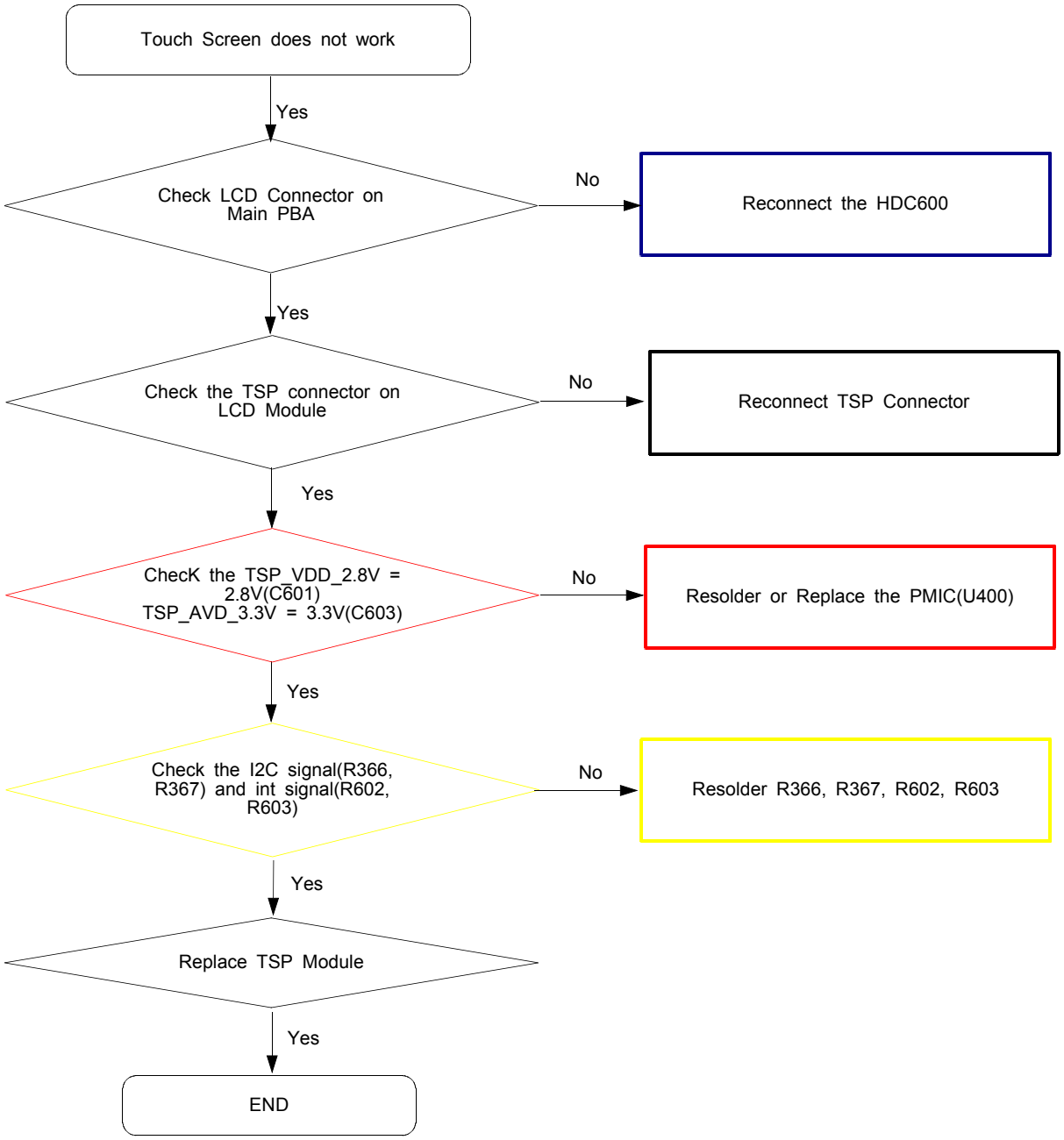
8-3-12. TSP



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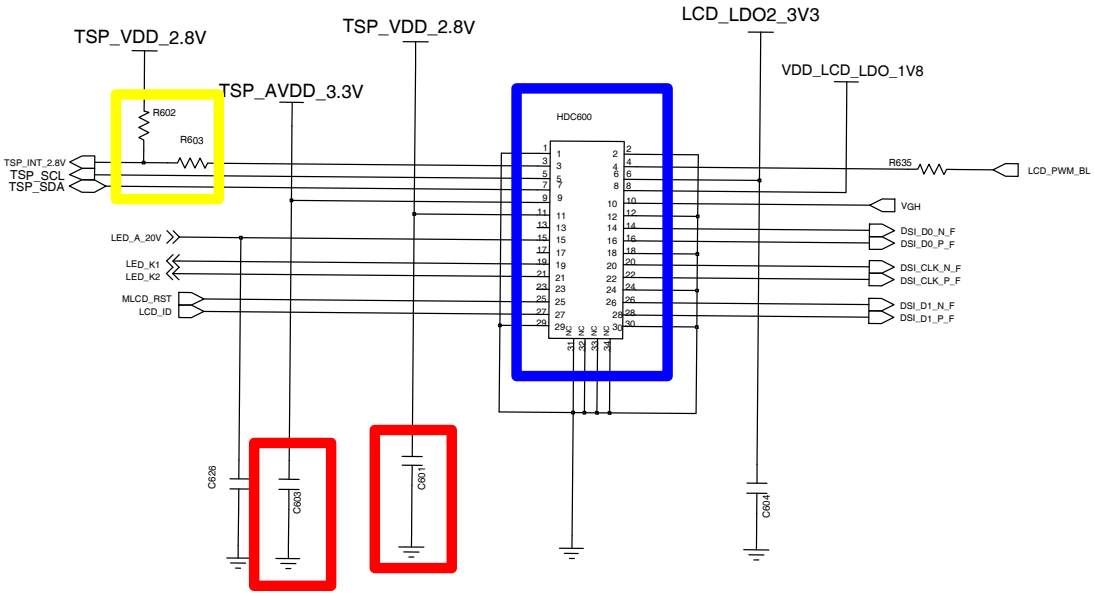
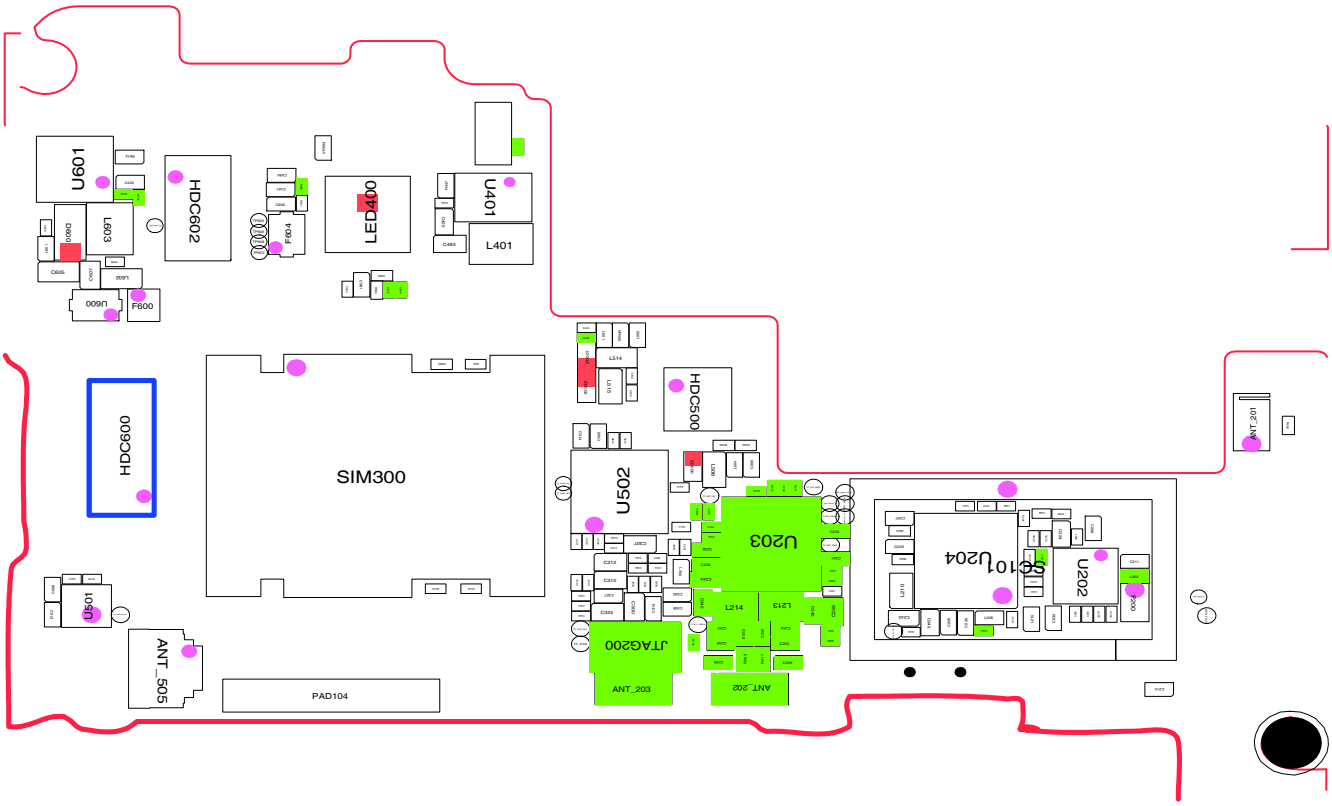


SMD LCD 5.01" WVGA PLS WITH TSP CON



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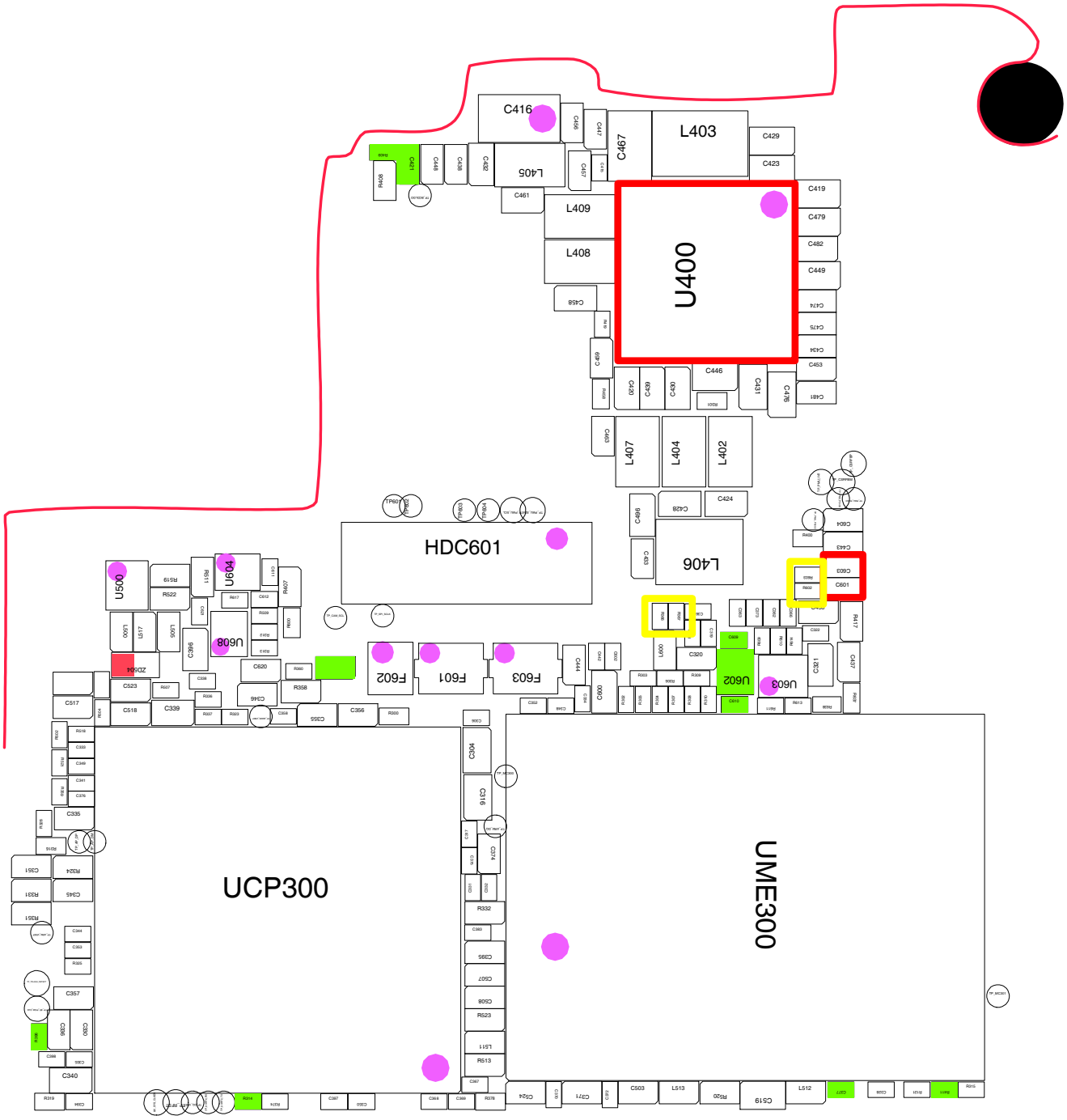

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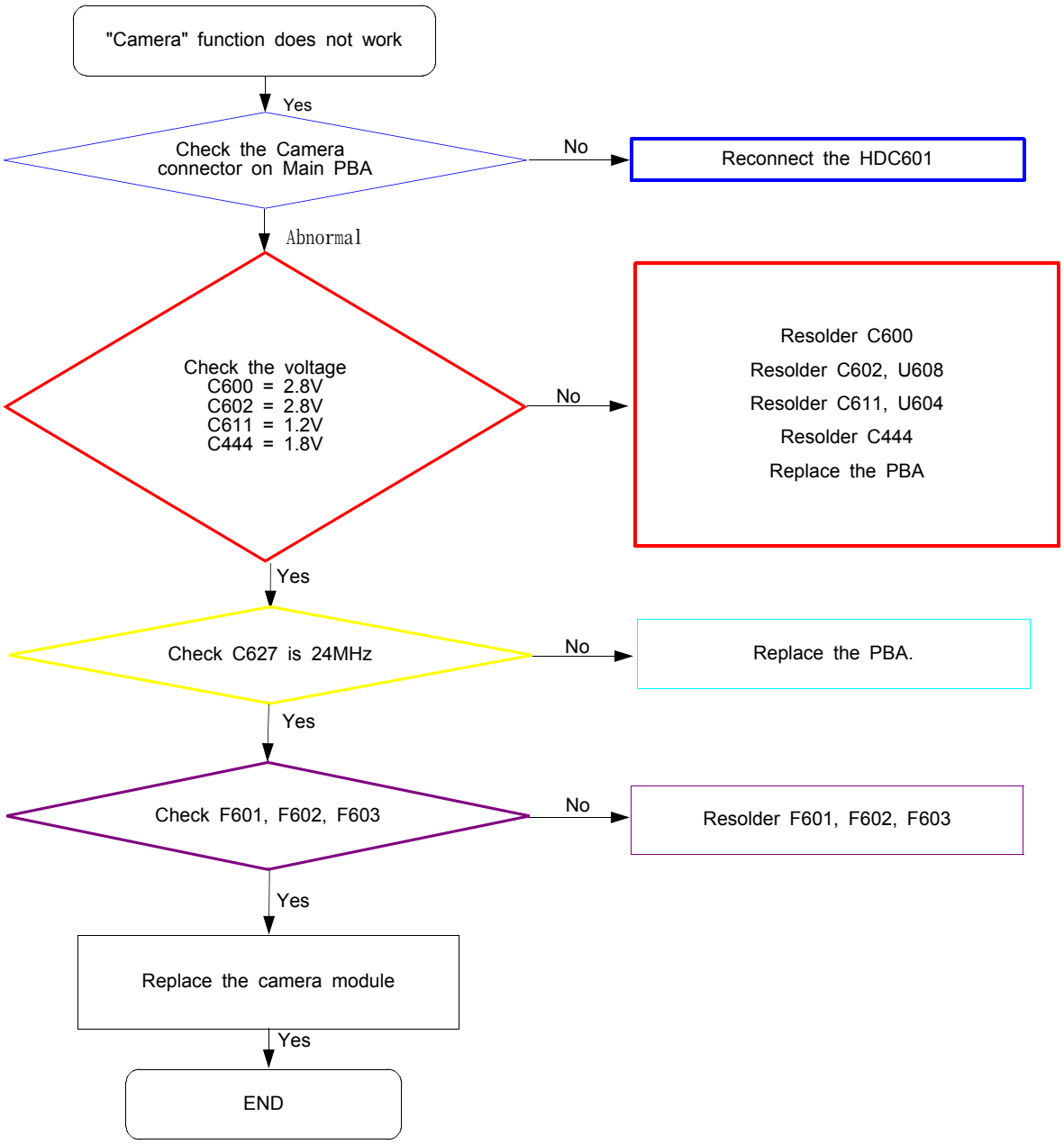
8-3-13. 8M CAM



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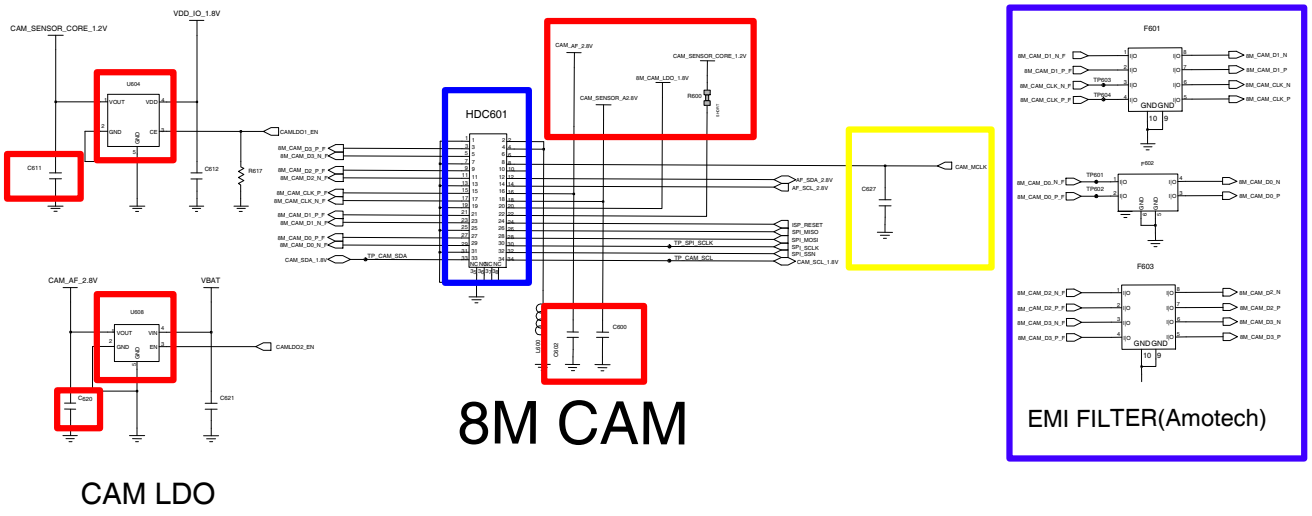

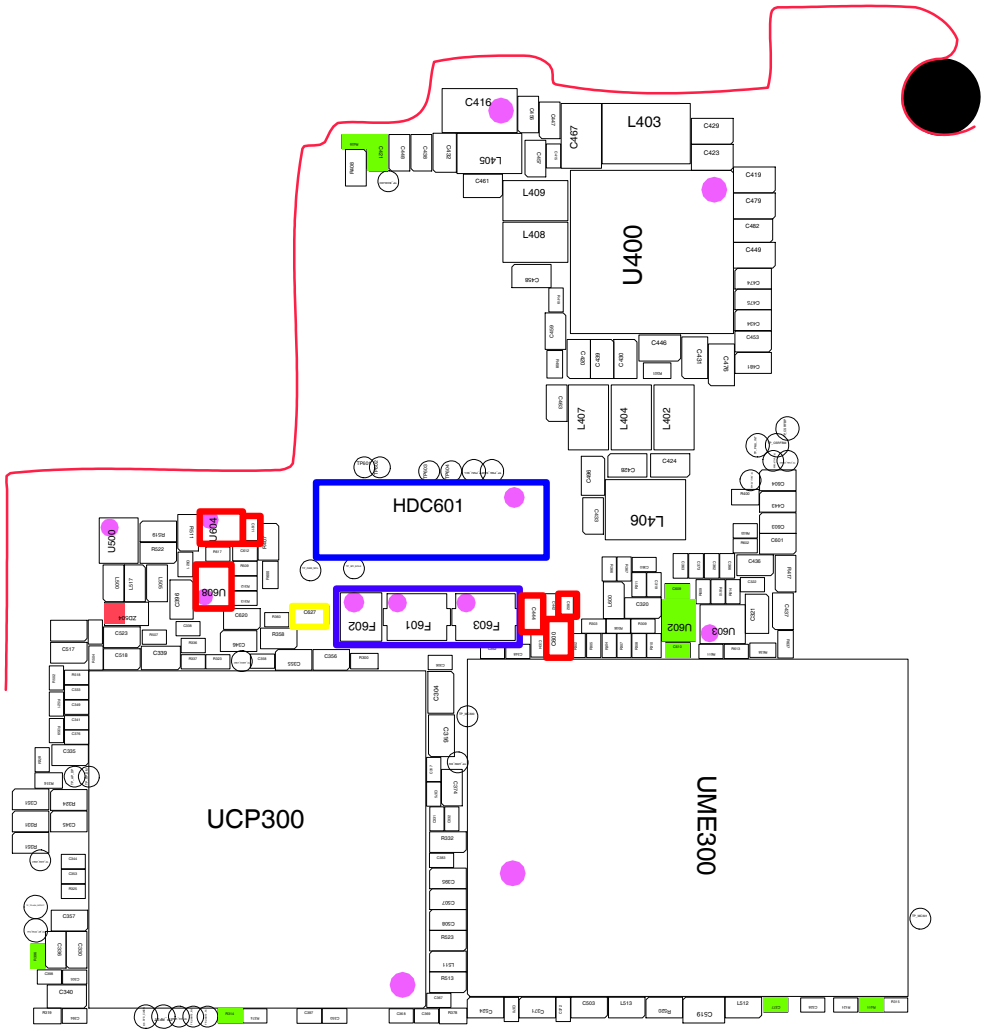

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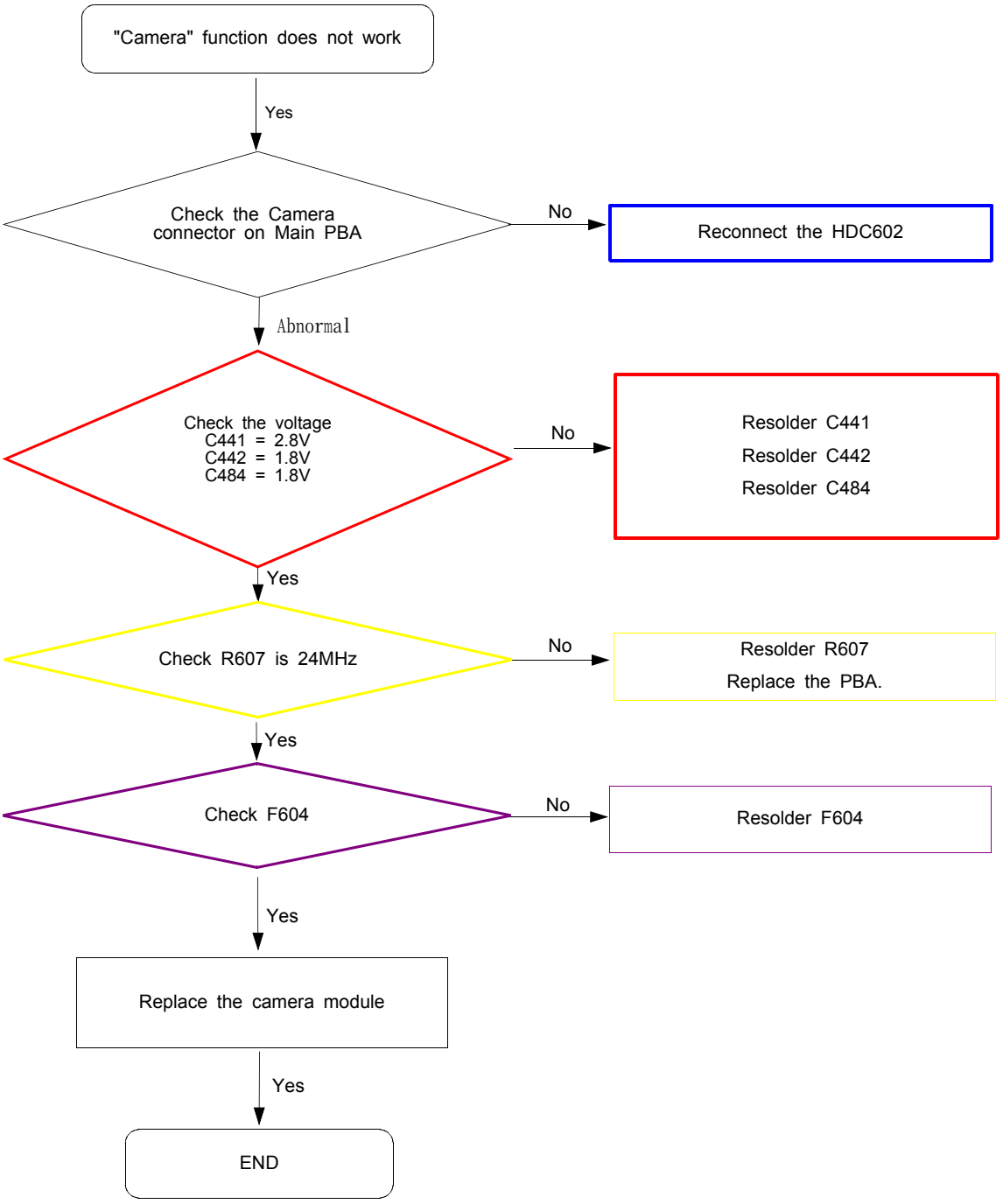
8-3-14. 2M CAM



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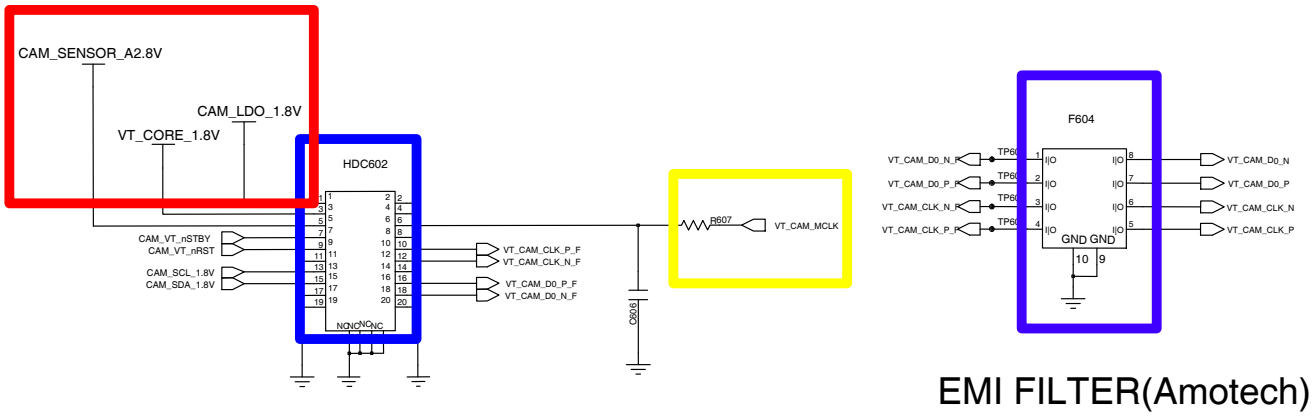
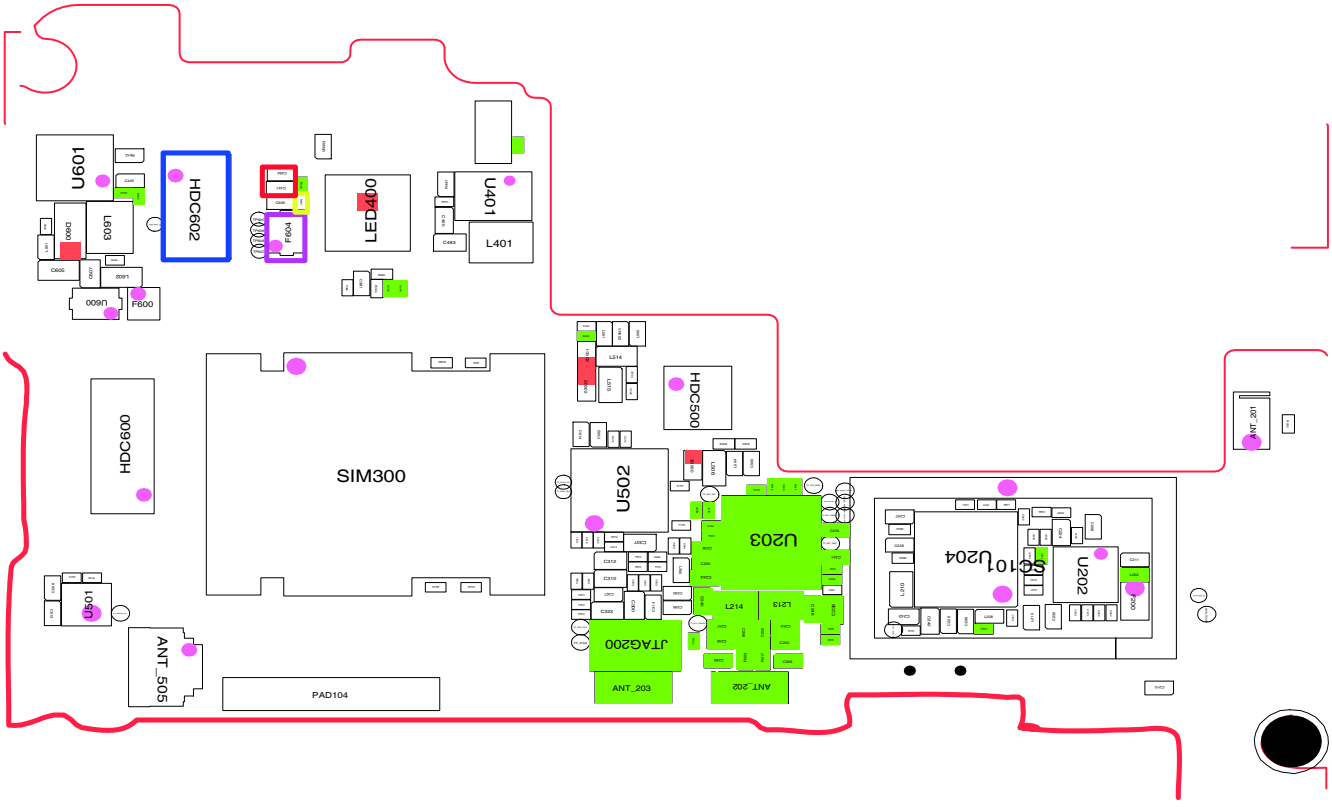


EMI FILTER(Amotech)

VT 2M CAM



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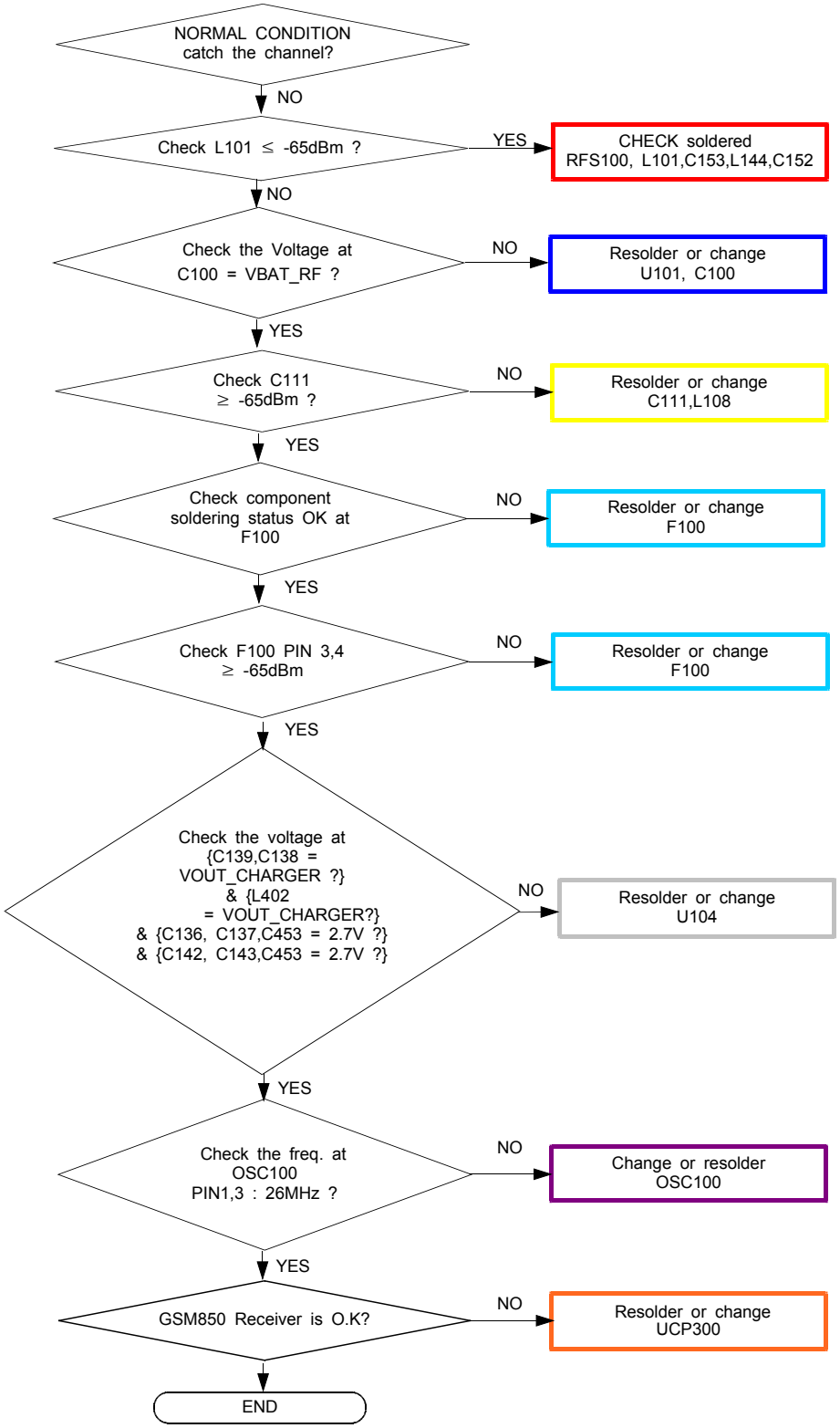
8-3-15. GSM850 RX



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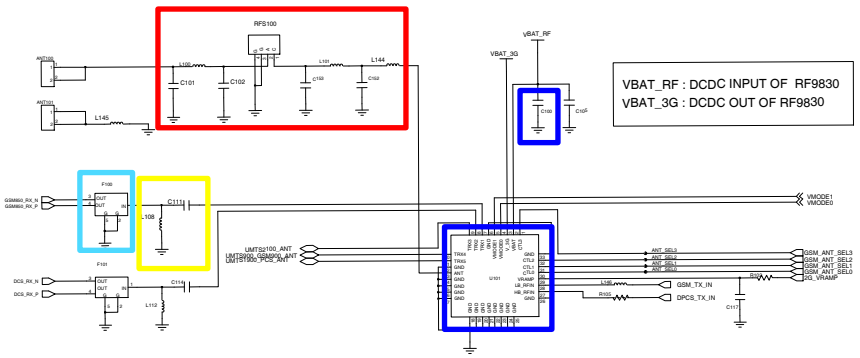
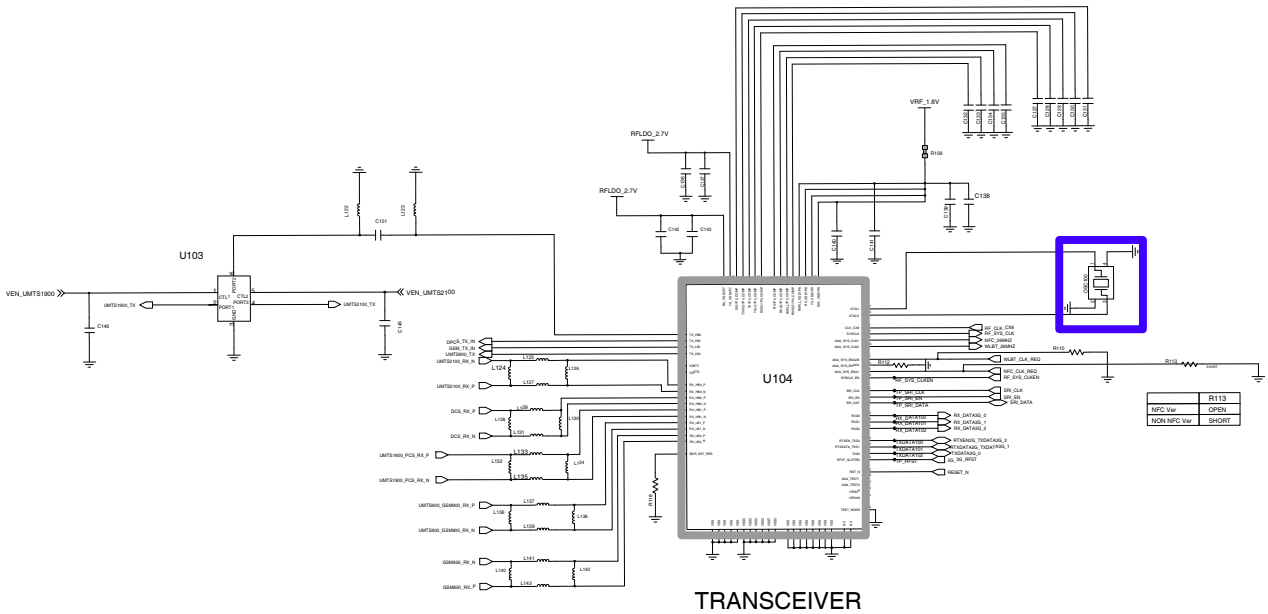
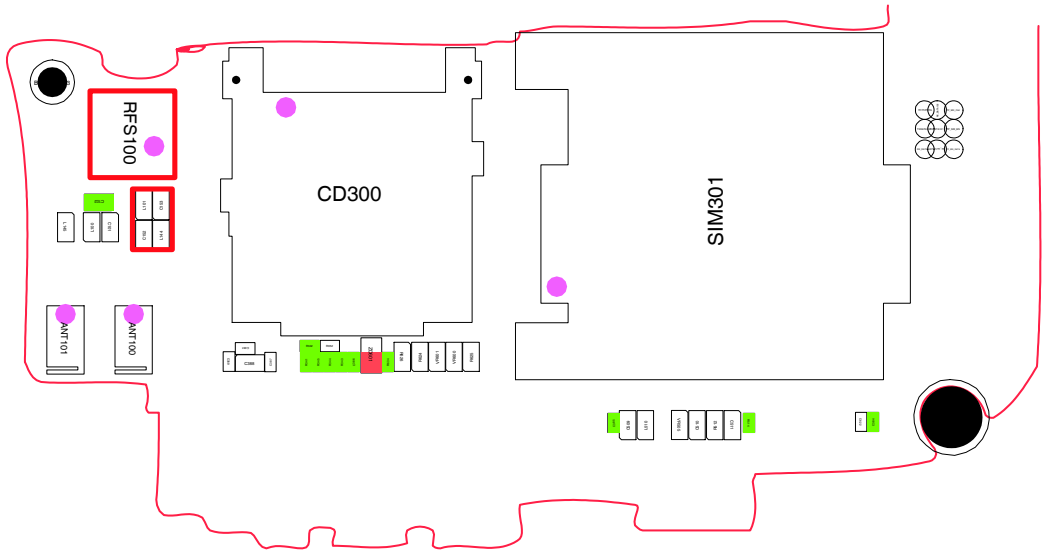


2G TX MODULE



TRANSCEIVER



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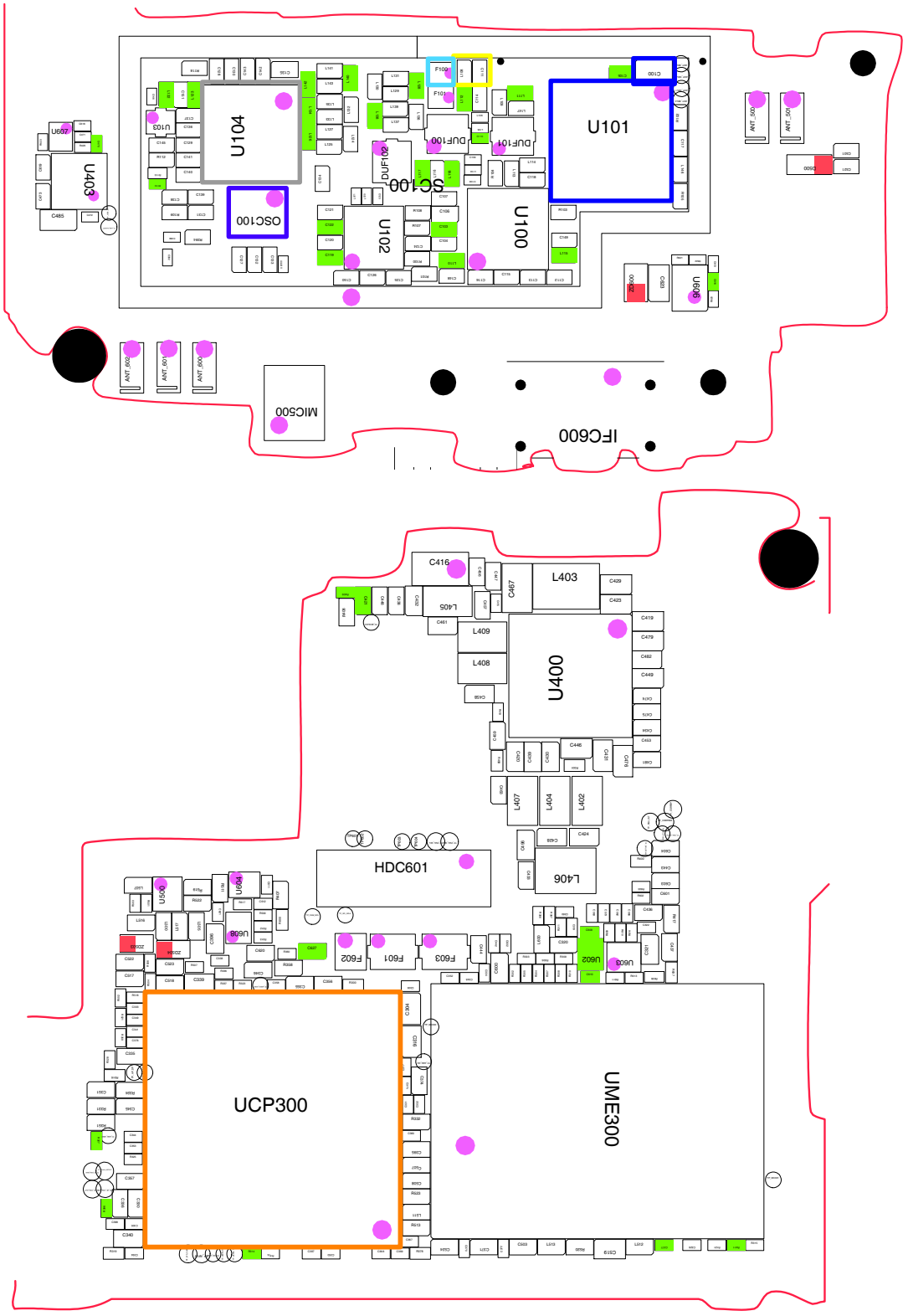

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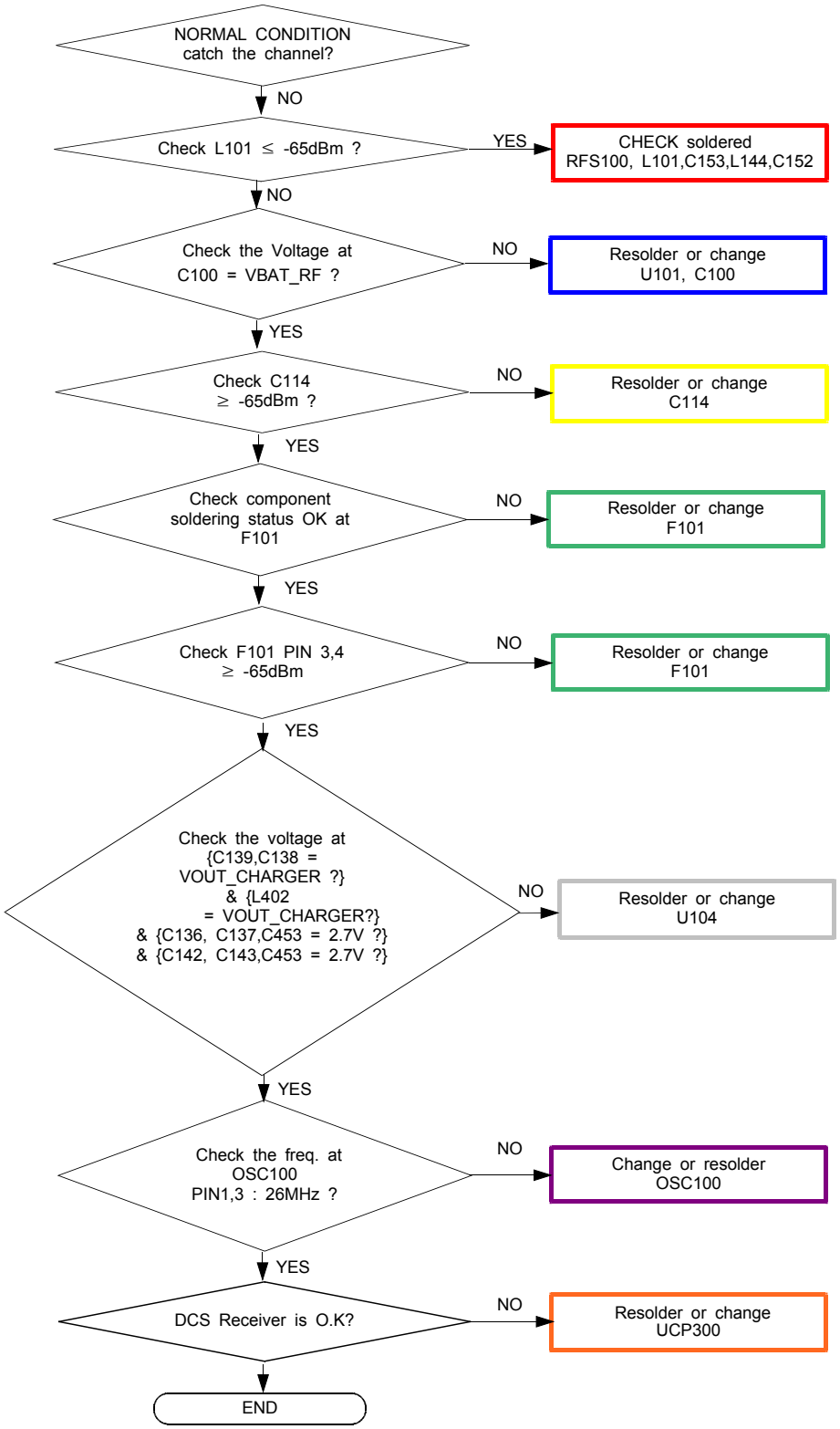
8-3-16. DCS RX



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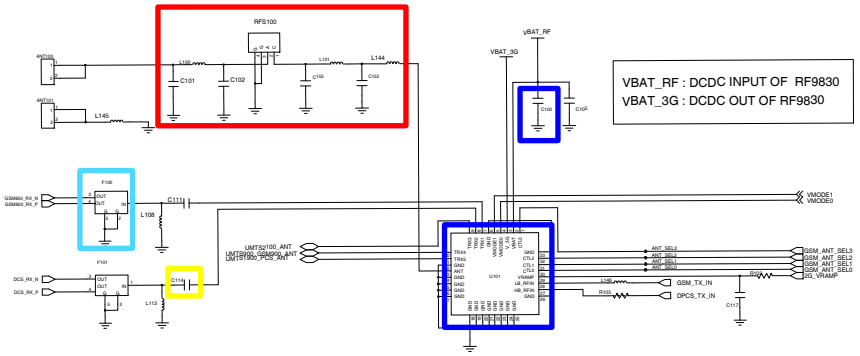
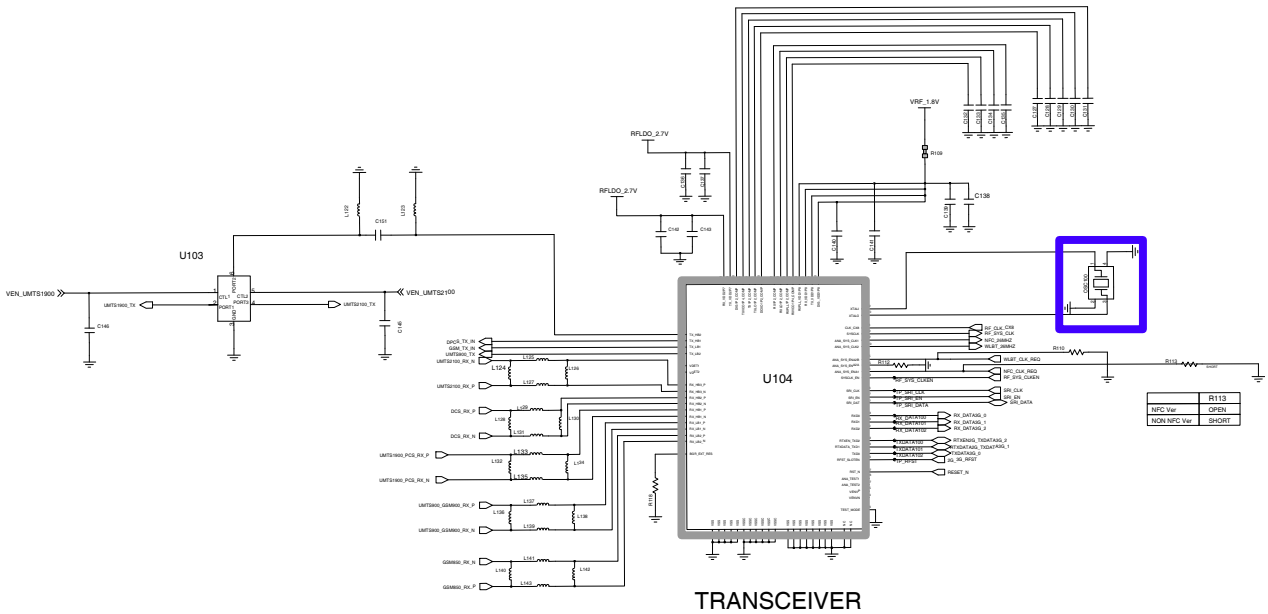
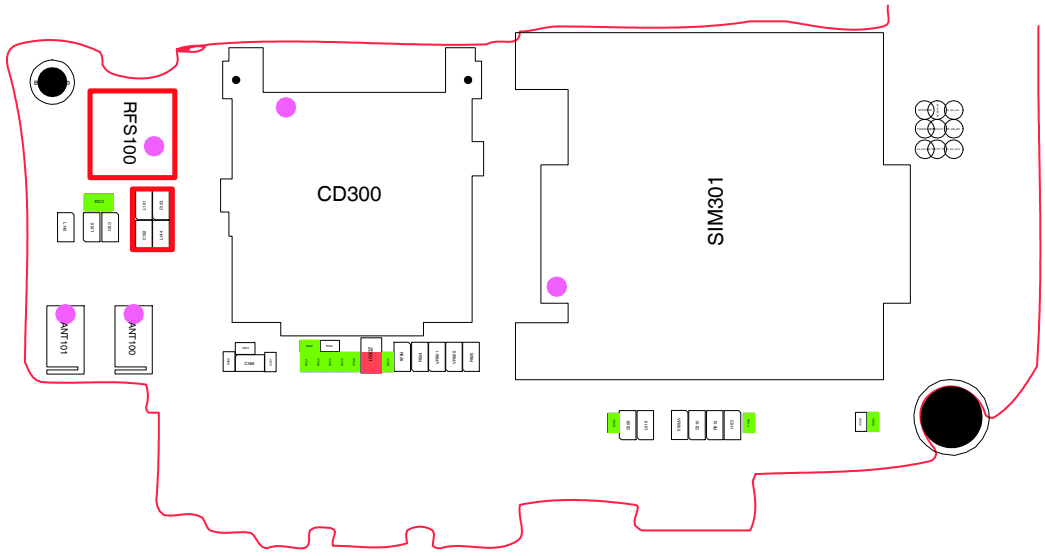


2G TX MODULE



TRANSCEIVER



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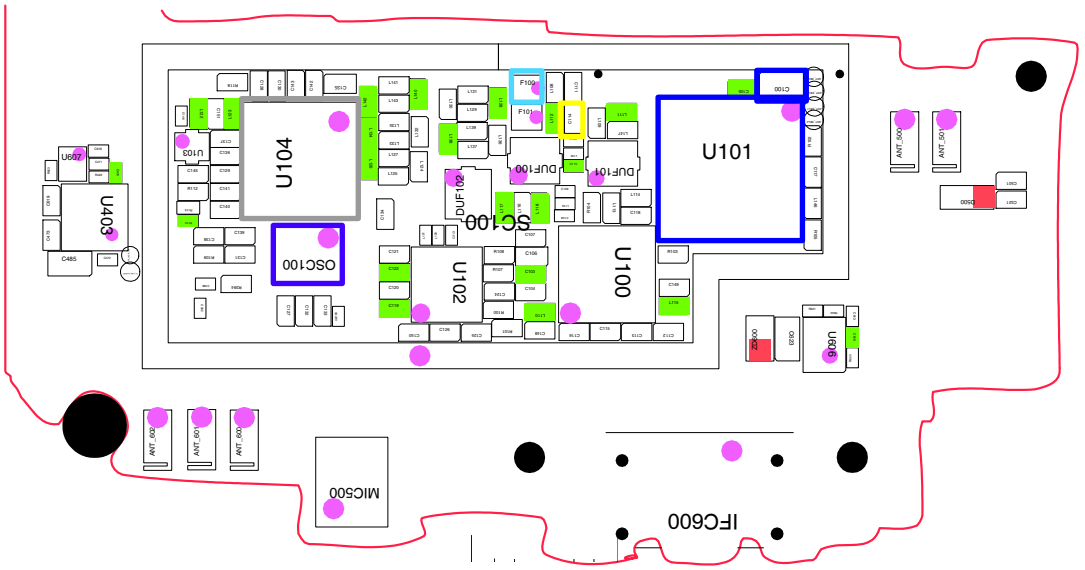

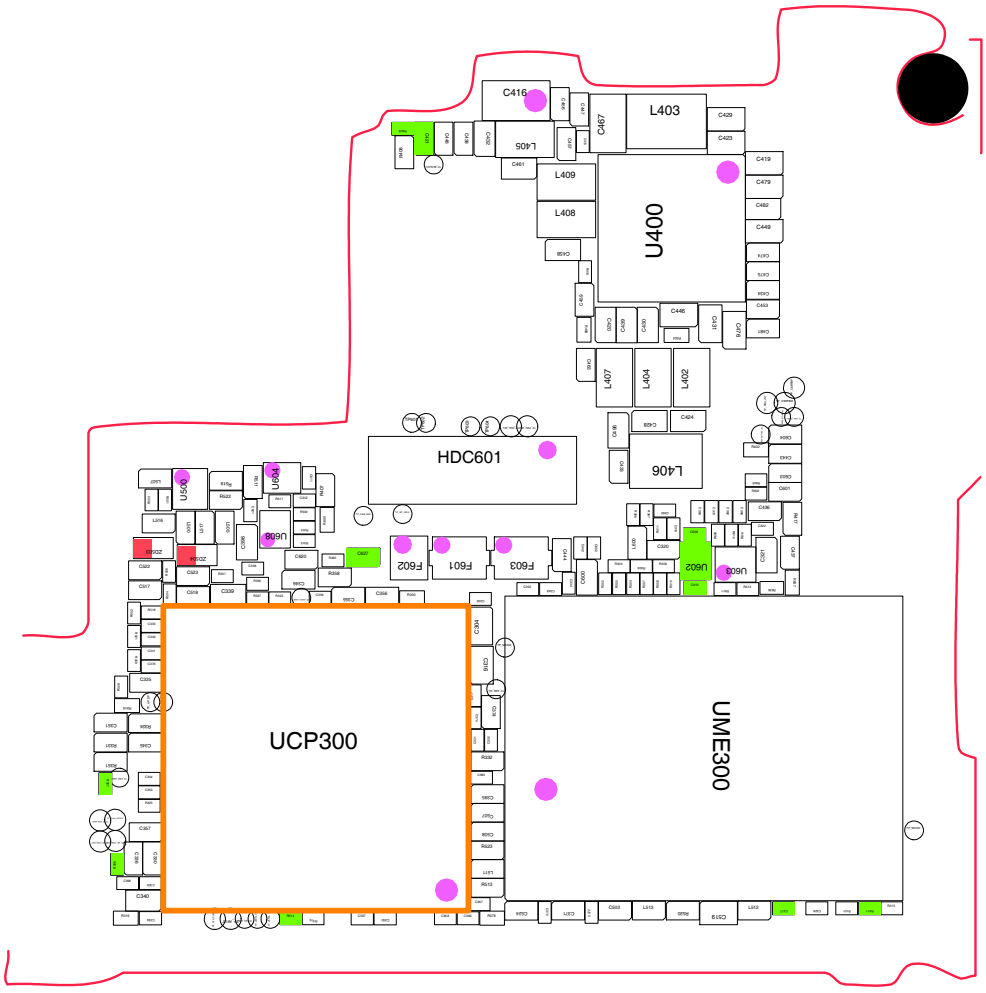

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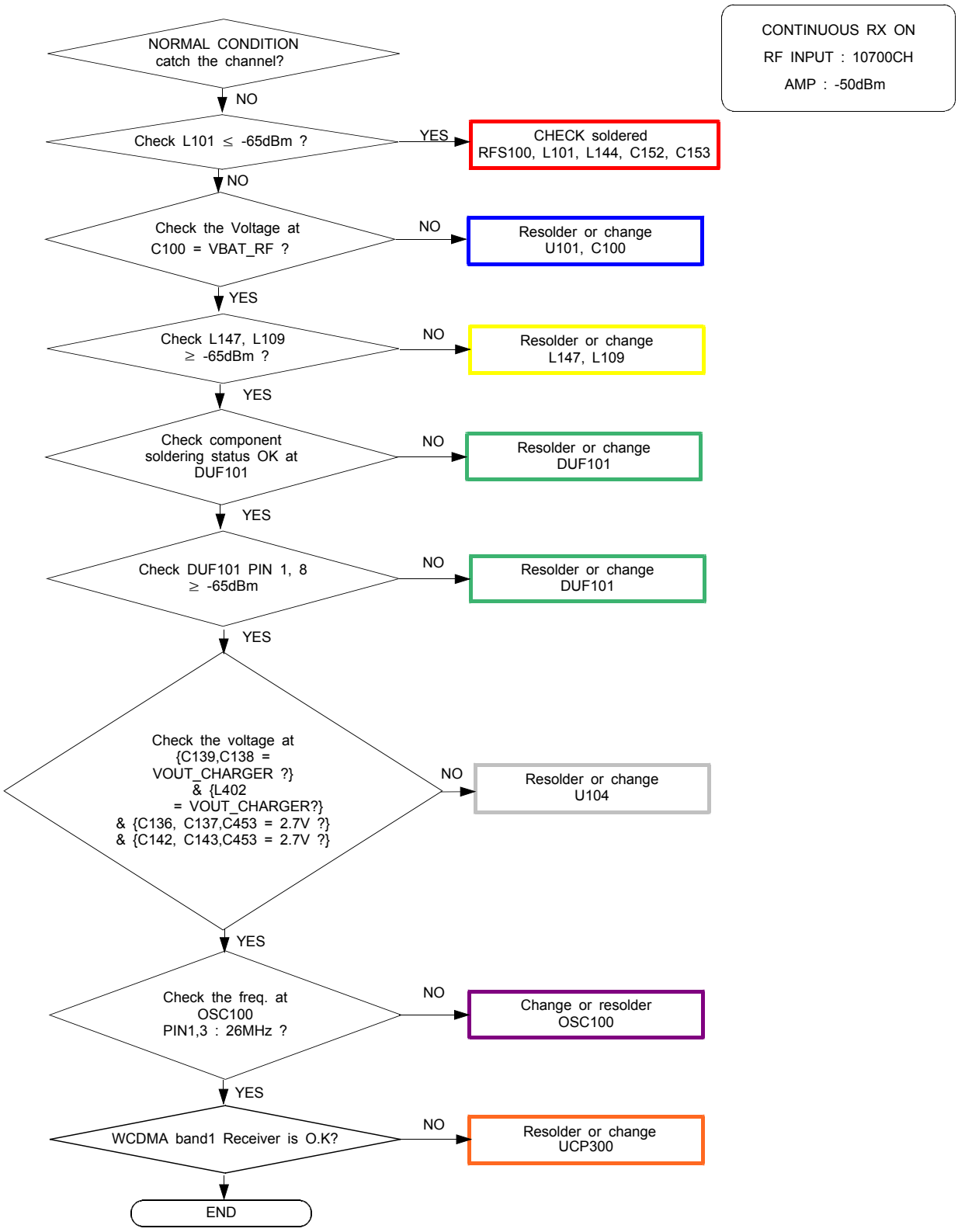
8-3-17. WCDMA Band1 RX



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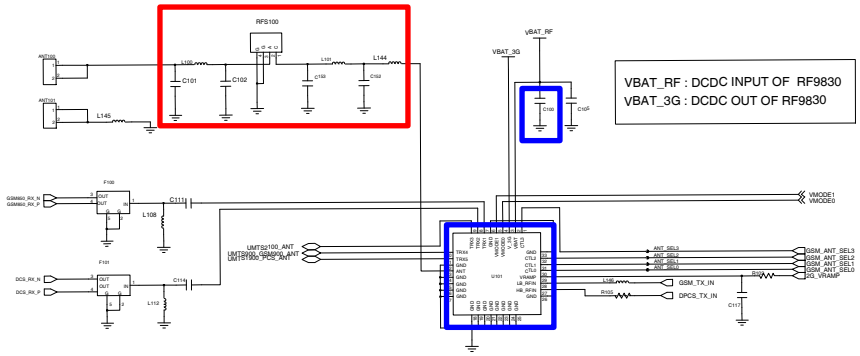
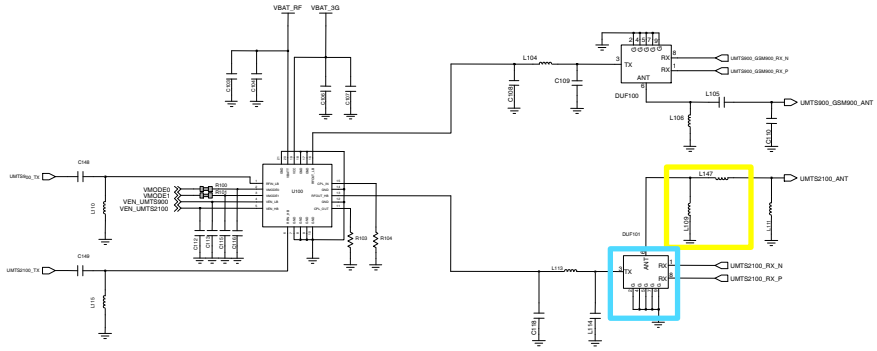
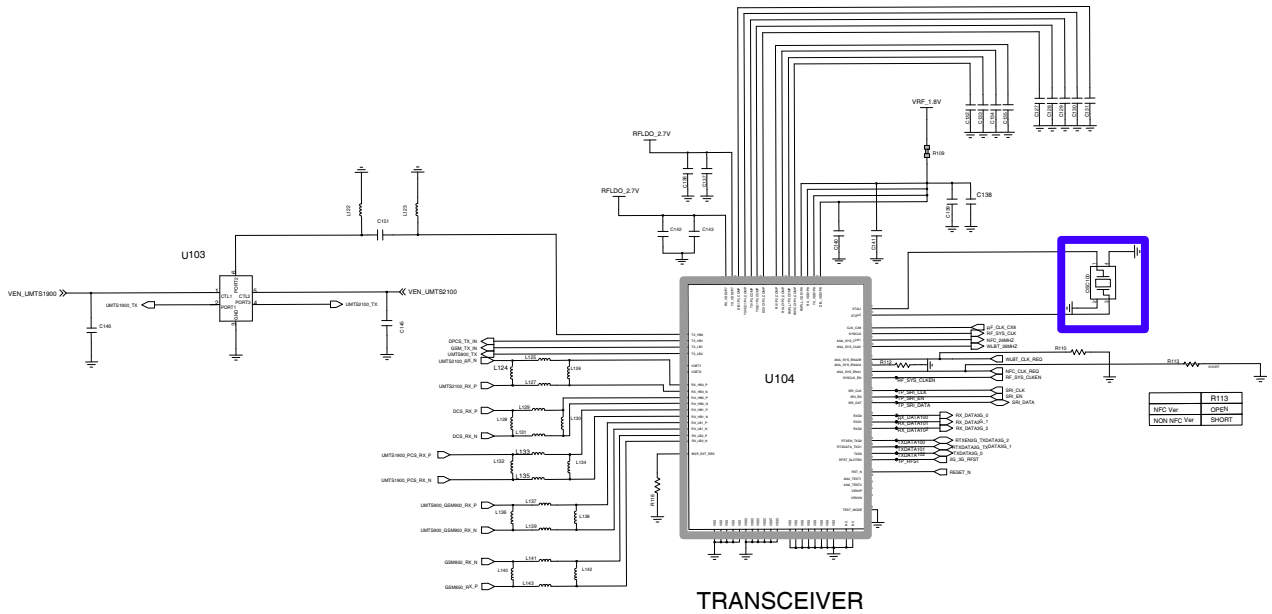


2G TX MODULE



3G DUAL PA(EU BAN1, 8)



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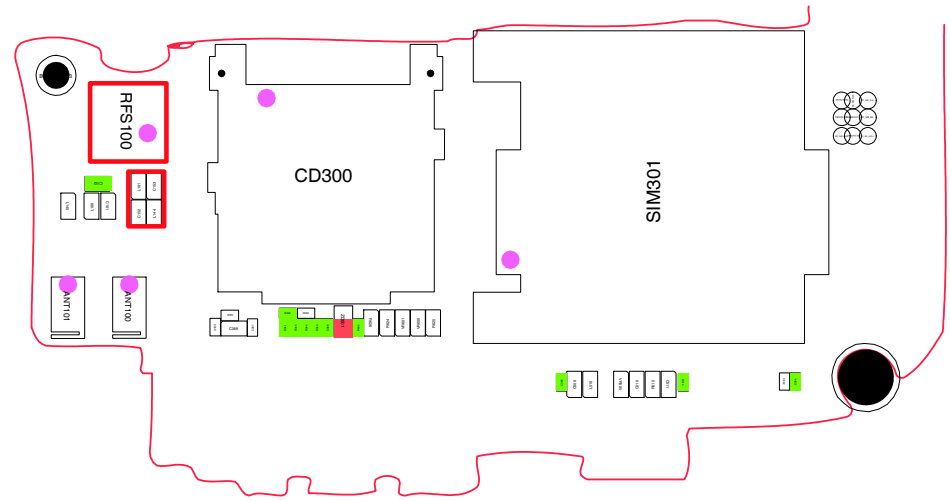

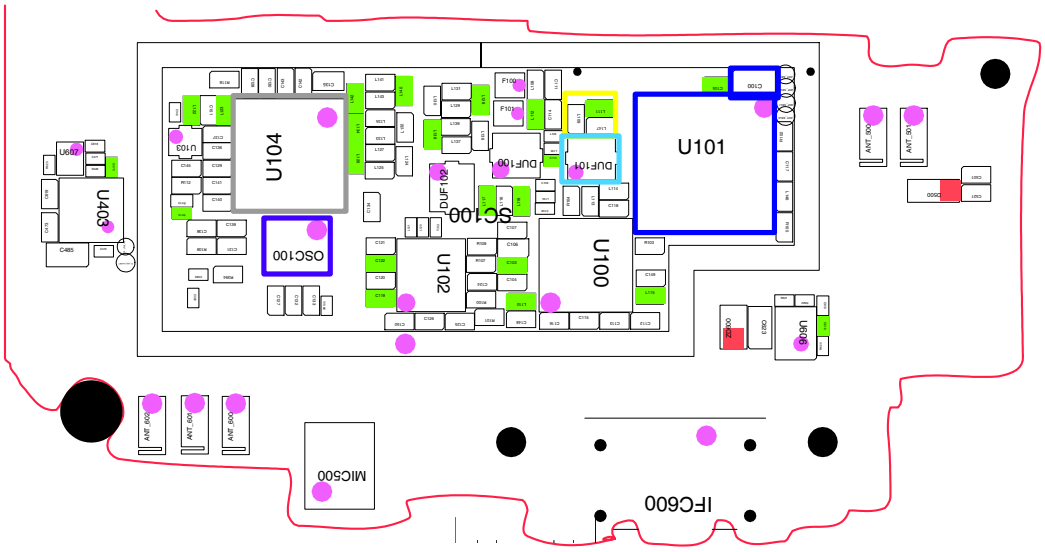

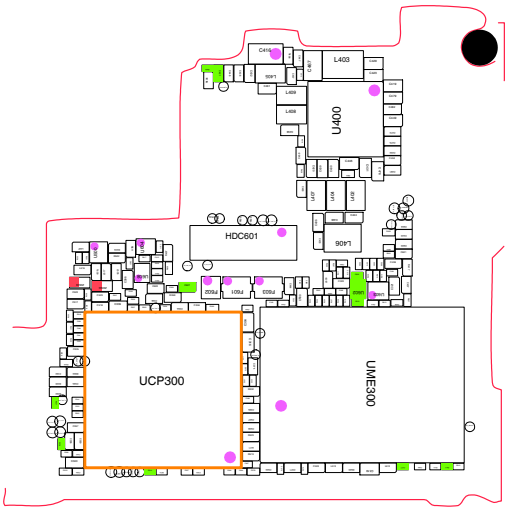

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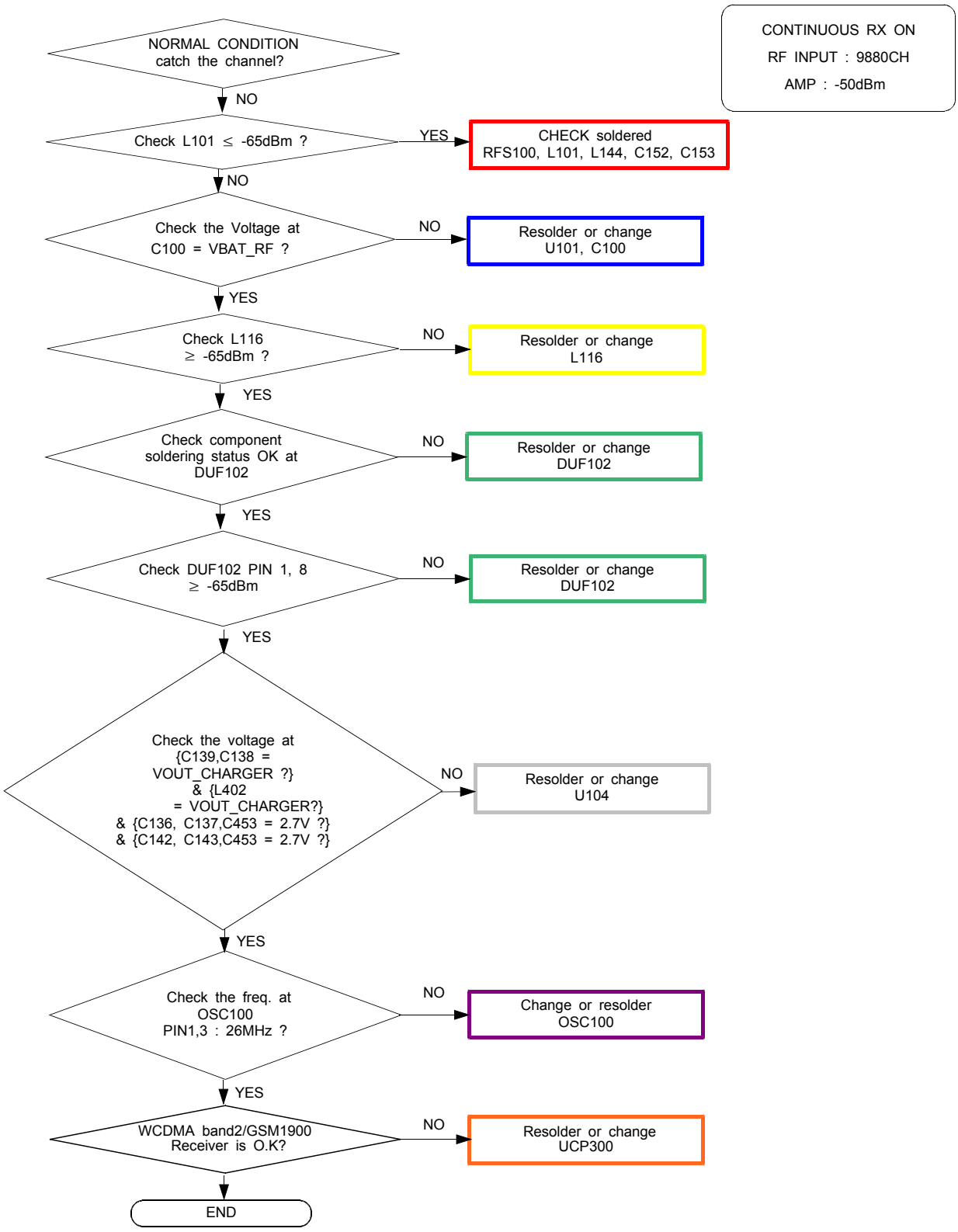
8-3-18. WCDMA Band2 / GSM1900 RX



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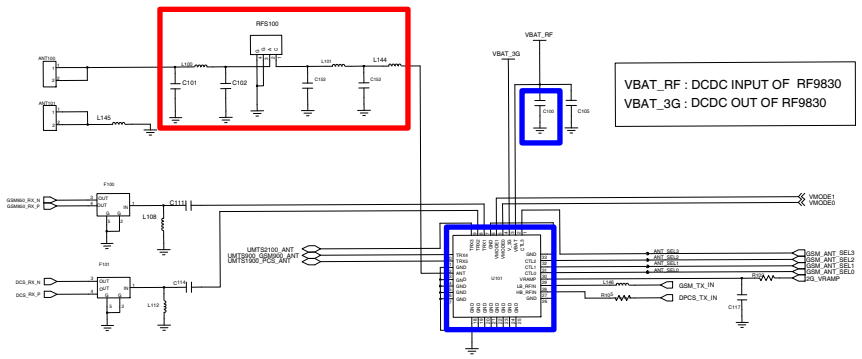
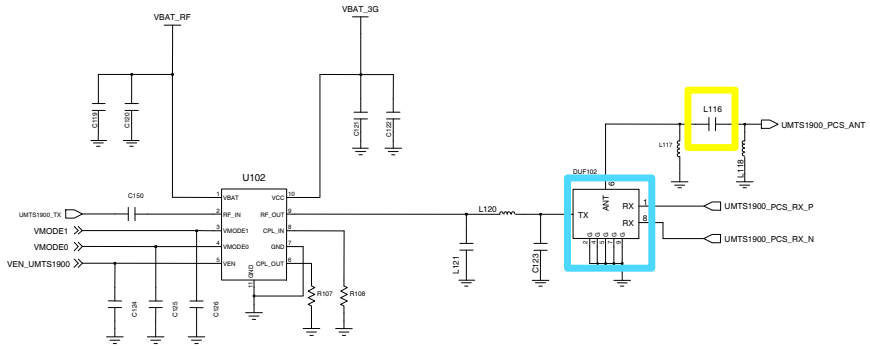
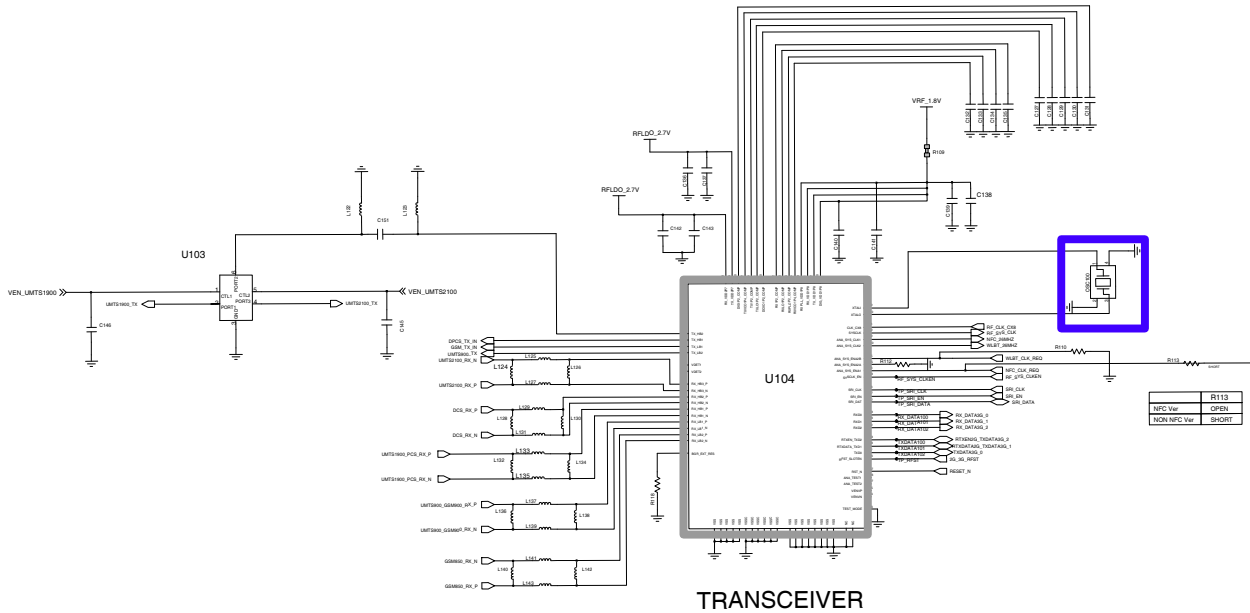


2G TX MODULE



3G PA(LA BAND2)



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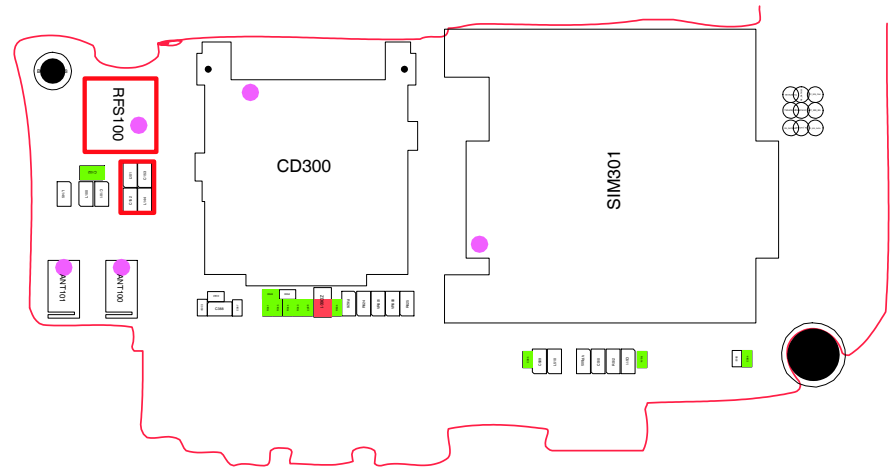

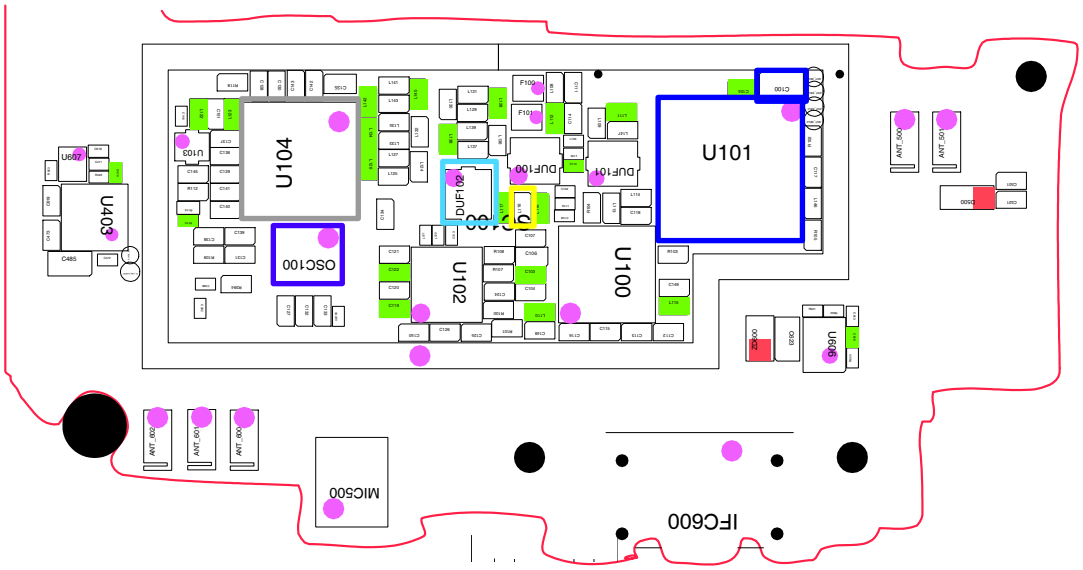

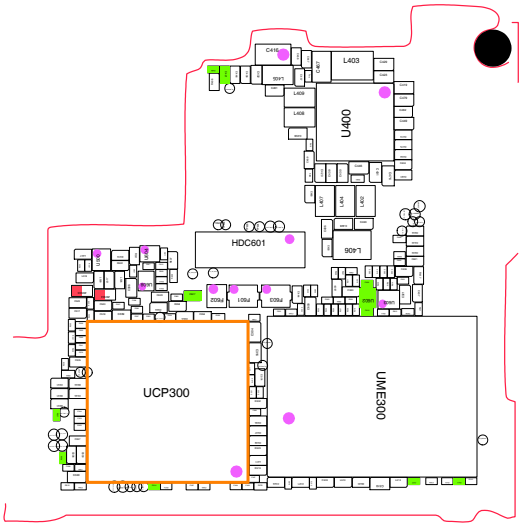

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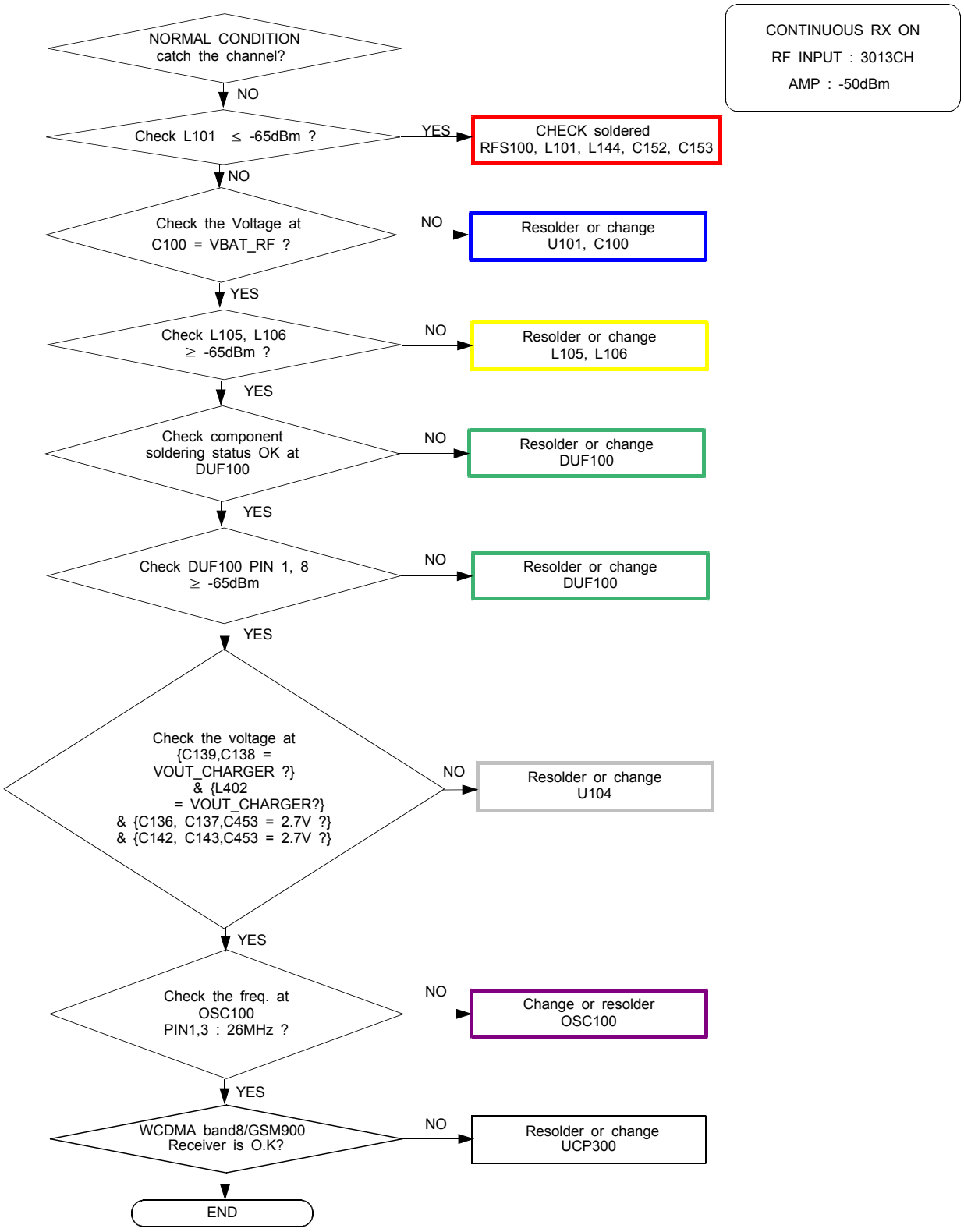
8-3-19. WCDMA Band8 / GSM900 RX



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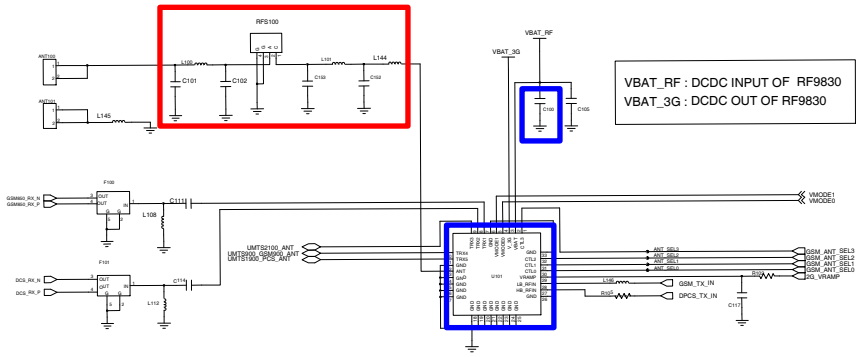
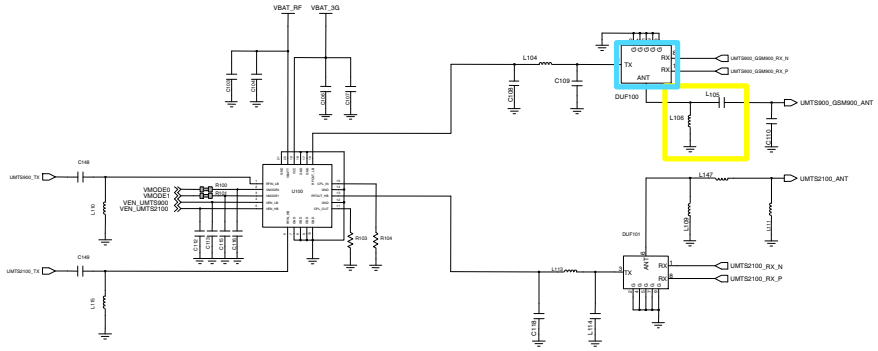
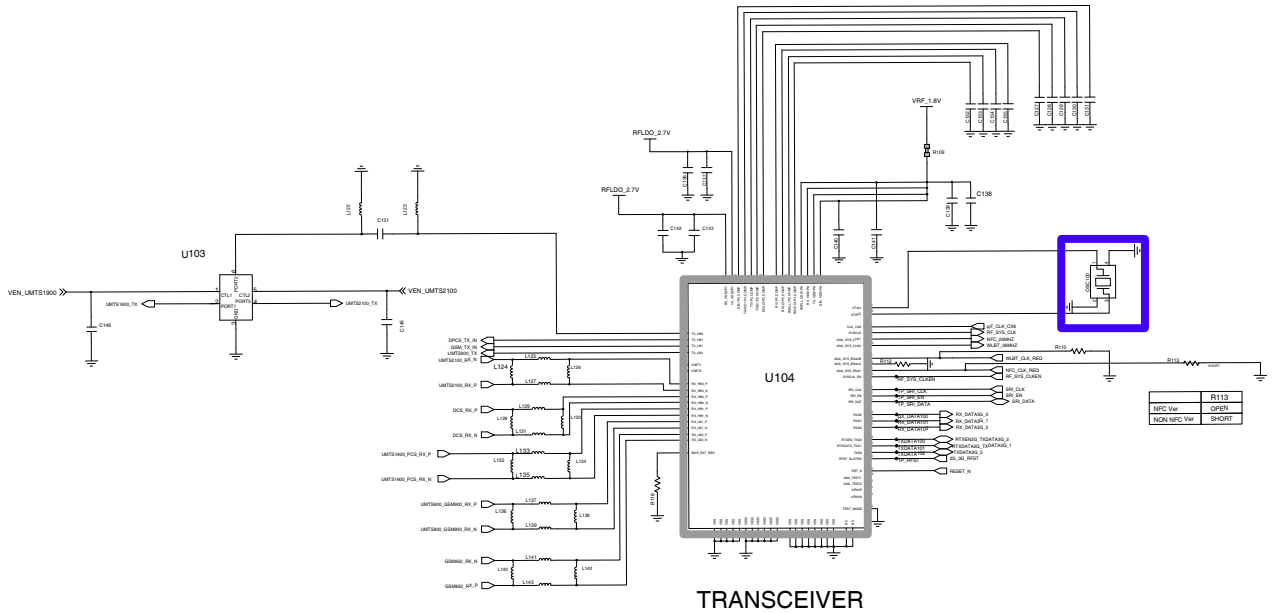


2G TX MODULE



3G DUAL PA(EU BAN1, 8)



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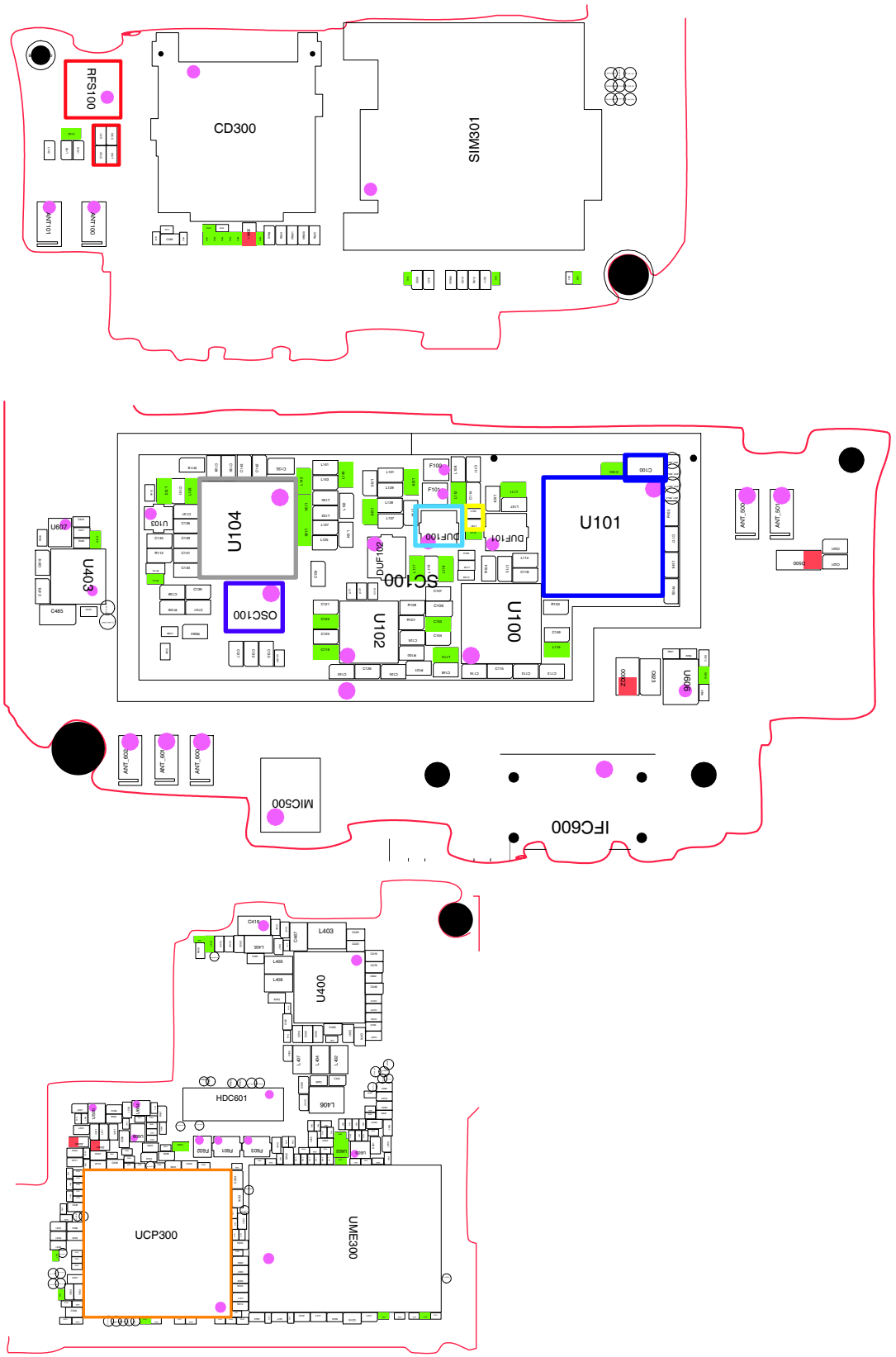

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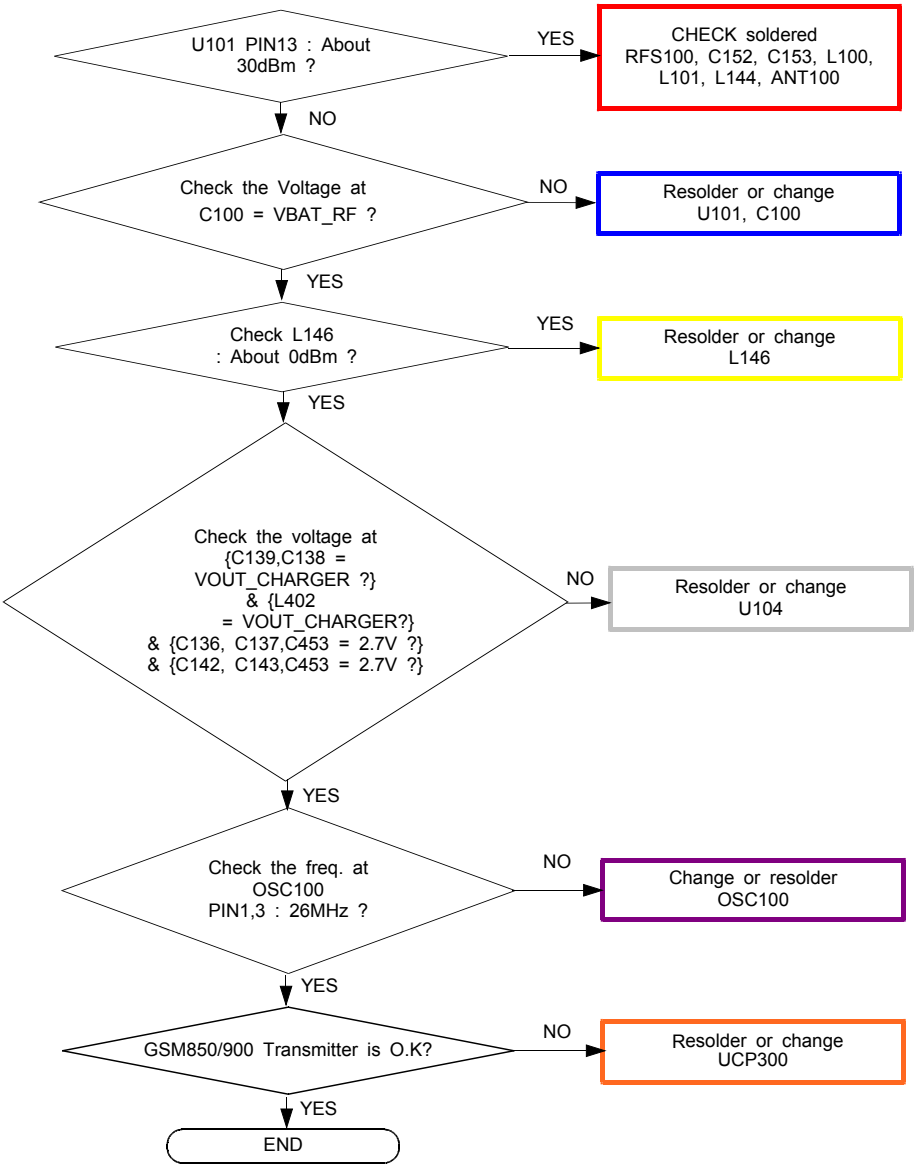
8-3-20. GSM850/GSM900 TX

CONTINOUS TX ON CONDITION
TX POWER DAC:14500 CODE APPLIED
GSM850 CH : 190
GSM900 CH : 62
RBW : 100KHz
VBW : 100KHz
SPAN : 10MHz
REF LEV. : 10dBm
ATT. : 20dB


U101 PIN13 : About 30dBm ?
YES
CHECK soldered RFS100, C152, C153, L100, L101, L144, ANT100
NO
Check the Voltage at C100 = VBAT_RF ?
NO
Resolder or change U101, C100
YES
Check L146 : About 0dBm ?
YES
Resolder or change L146
YES
Check the voltage at {C139,C138 = VOUT_CHARGER ?} & {L402 = VOUT_CHARGER?} & {C136, C137,C453 = 2.7V ?} & {C142, C143,C453 = 2.7V ?}
NO
Resolder or change U104
YES
Check the freq. at OSC100 PIN1,3 : 26MHz ?
NO
Change or resolder OSC100
YES
GSM850/900 Transmitter is O.K?
NO
Resolder or change UCP300
YES
END

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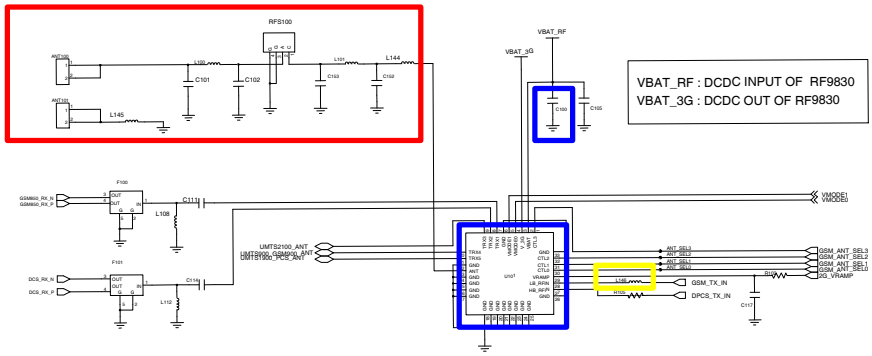
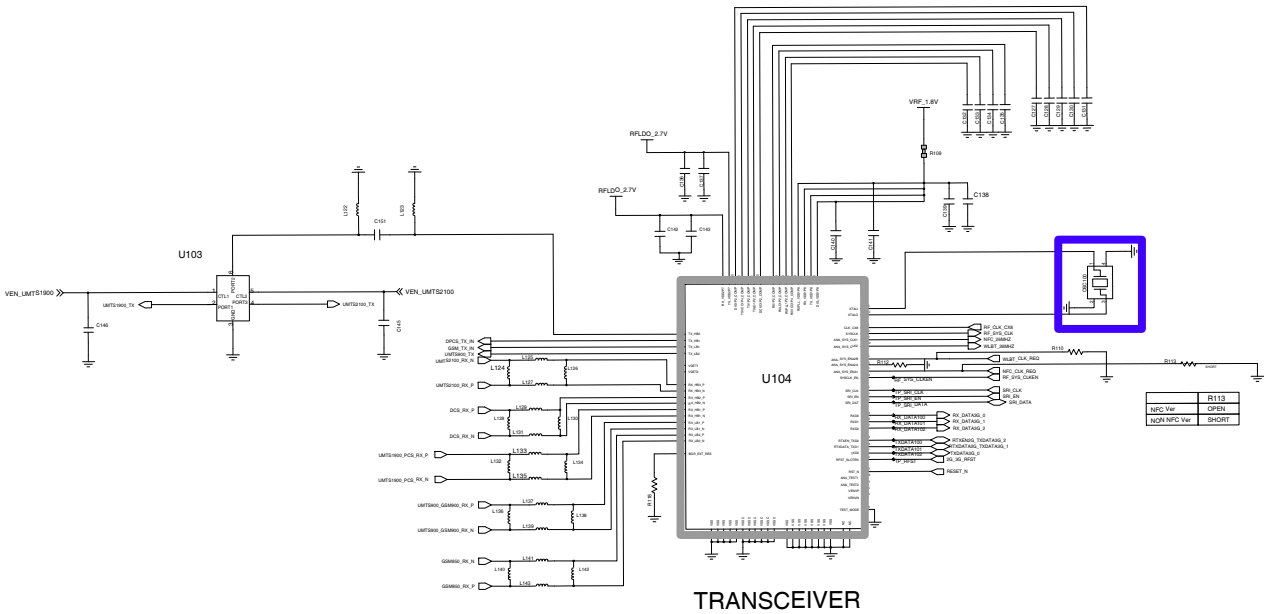
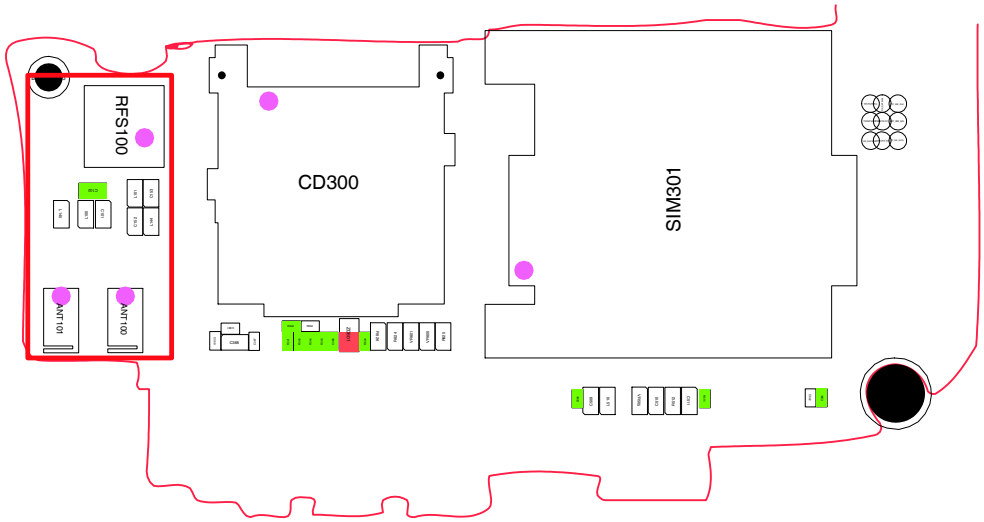


2G TX MODULE



TRANSCEIVER



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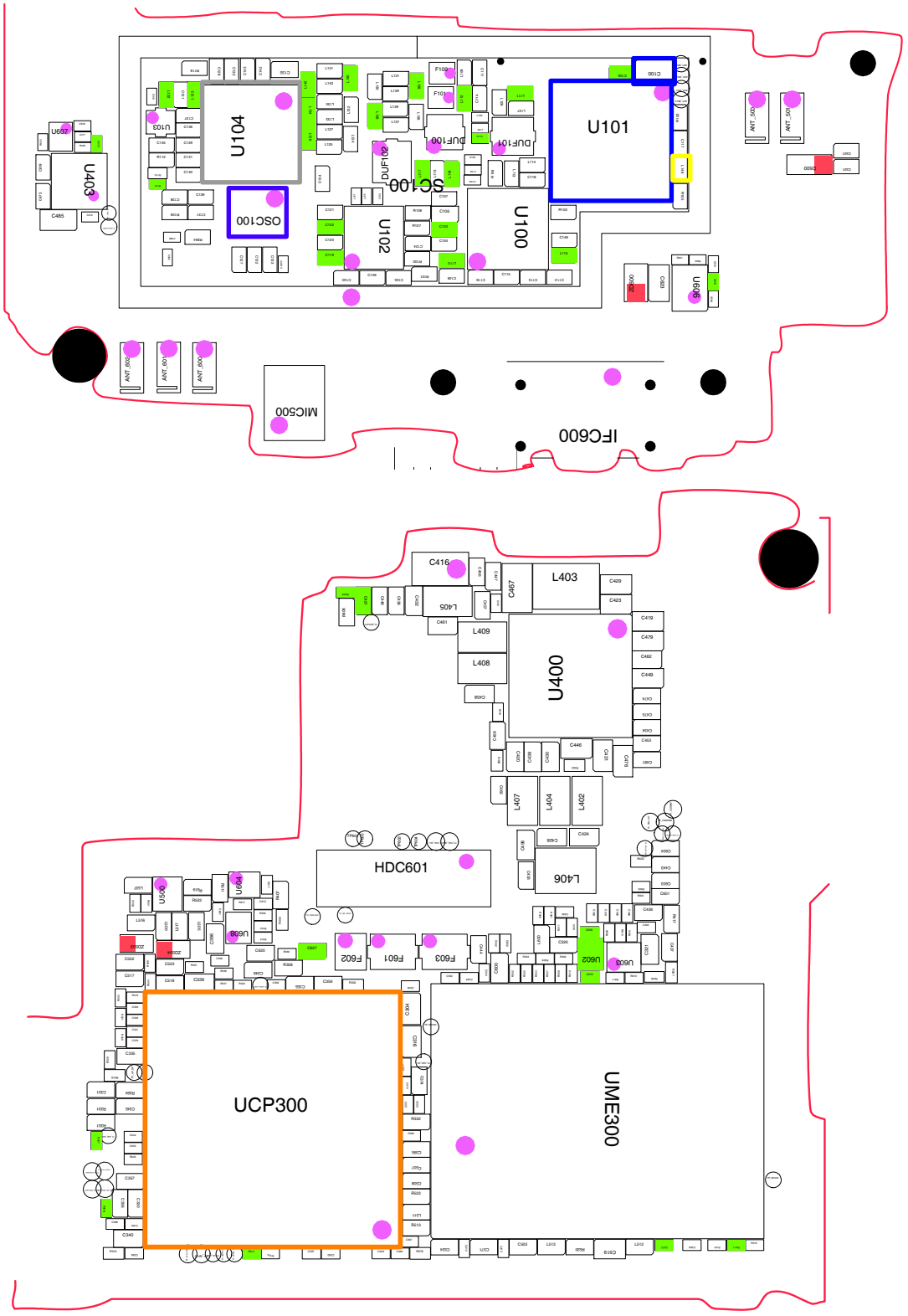

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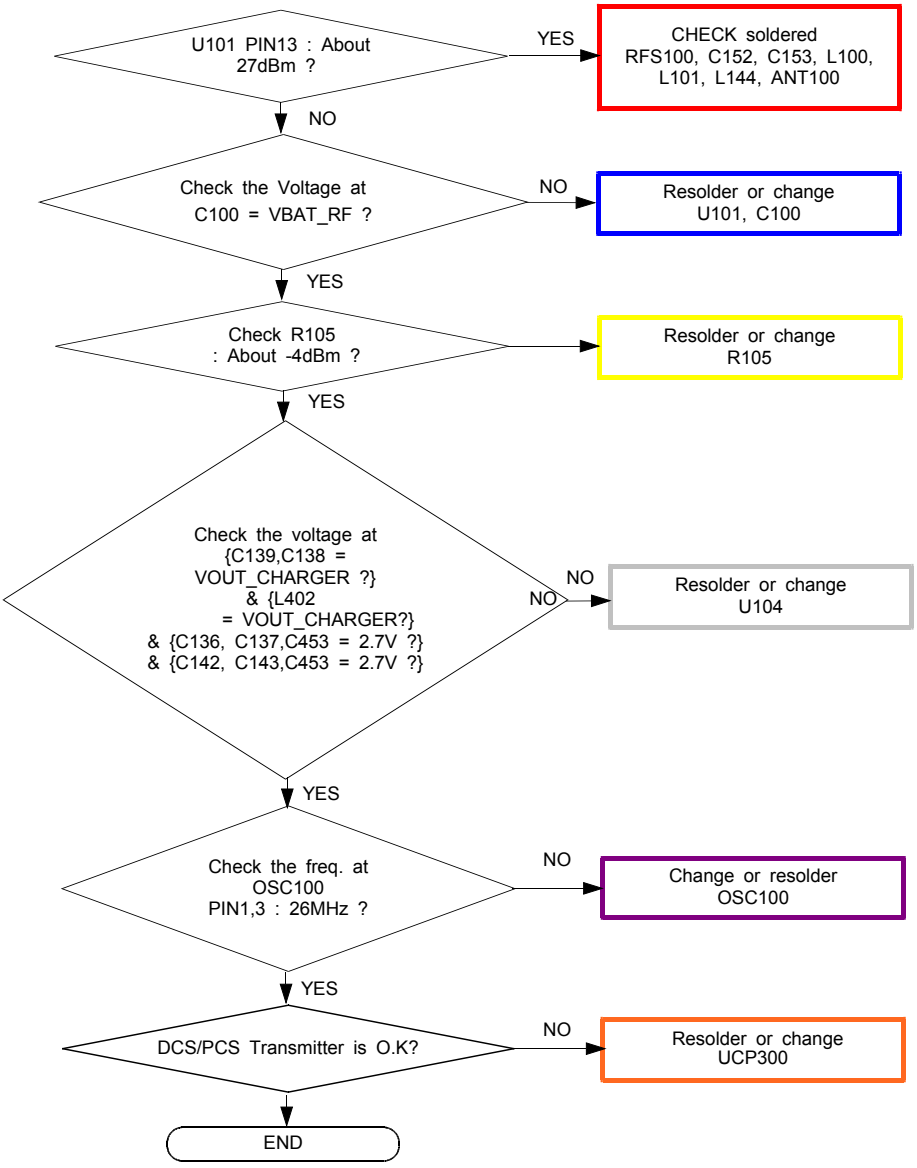
8-3-21. DCS/PCS TX

CONTINOUS TX ON CONDITION
TX POWER DAC:14500 CODE APPLIED
DCS CH : 685
PCS CH : 661
RBW : 100KHz
VBW : 100KHz
SPAN : 10MHz
REF LEV. : 10dBm
ATT. : 20dB


U101 PIN13 : About 27dBm ?
YES
CHECK soldered RFS100, C152, C153, L100, L101, L144, ANT100
NO
Check the Voltage at C100 = VBAT_RF ?
NO
Resolder or change U101, C100
YES
Check R105 : About -4dBm ?
Resolder or change R105
YES
Check the voltage at {C139,C138 = VOUT_CHARGER ?} & {L402 = VOUT_CHARGER?} & {C136, C137,C453 = 2.7V ?} & {C142, C143,C453 = 2.7V ?}
NO
NO
Resolder or change U104
YES
Check the freq. at OSC100 PIN1,3 : 26MHz ?
NO
Change or resolder OSC100
YES
DCS/PCS Transmitter is O.K?
NO
Resolder or change UCP300
END

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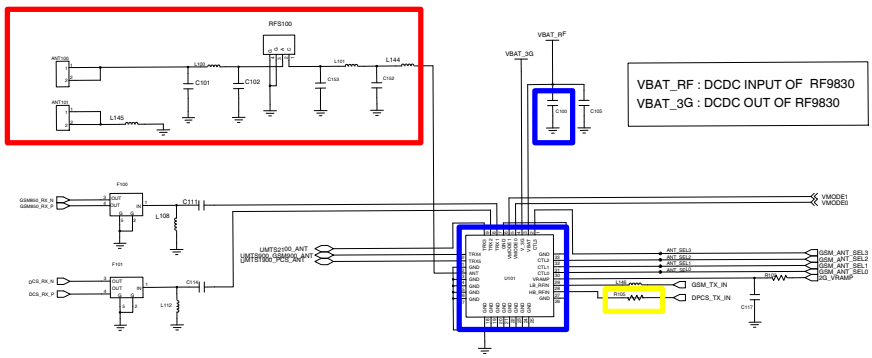
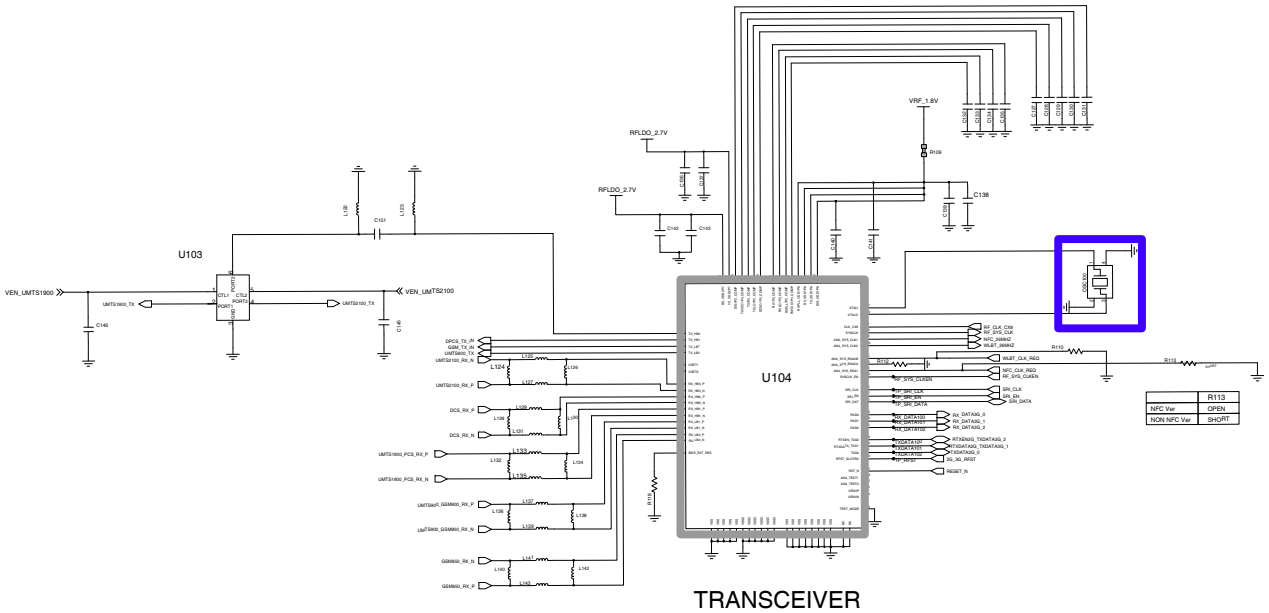
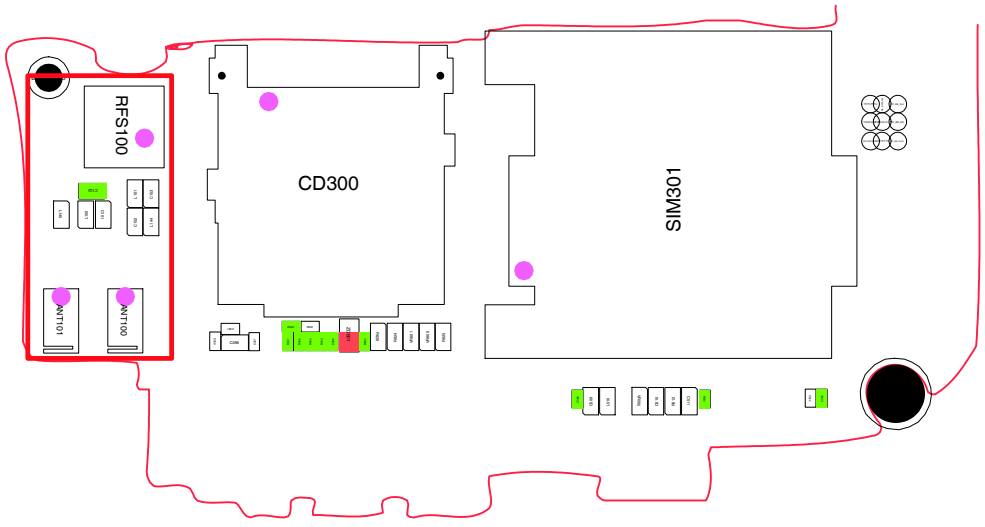


2G TX MODULE



TRANSCEIVER



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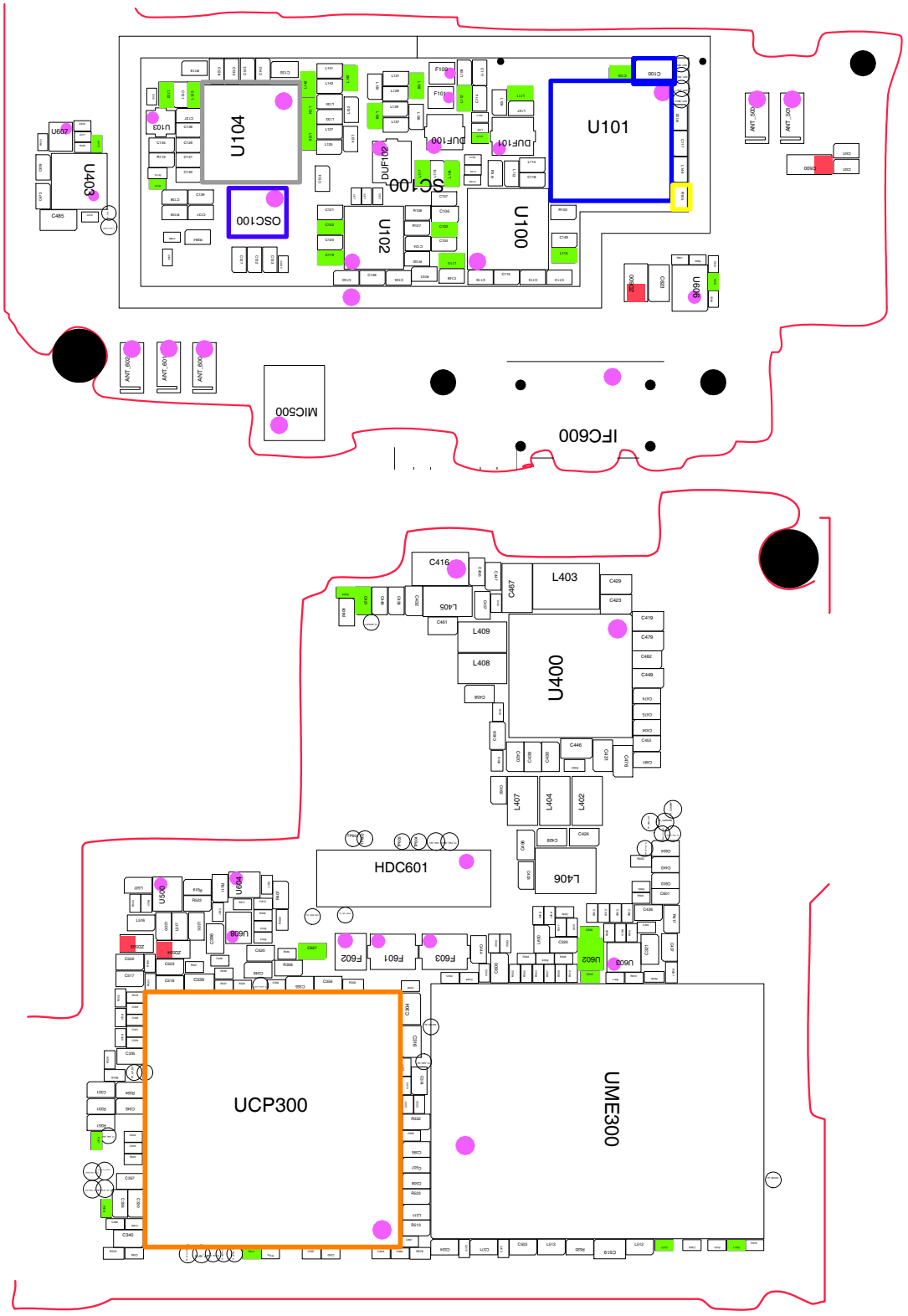

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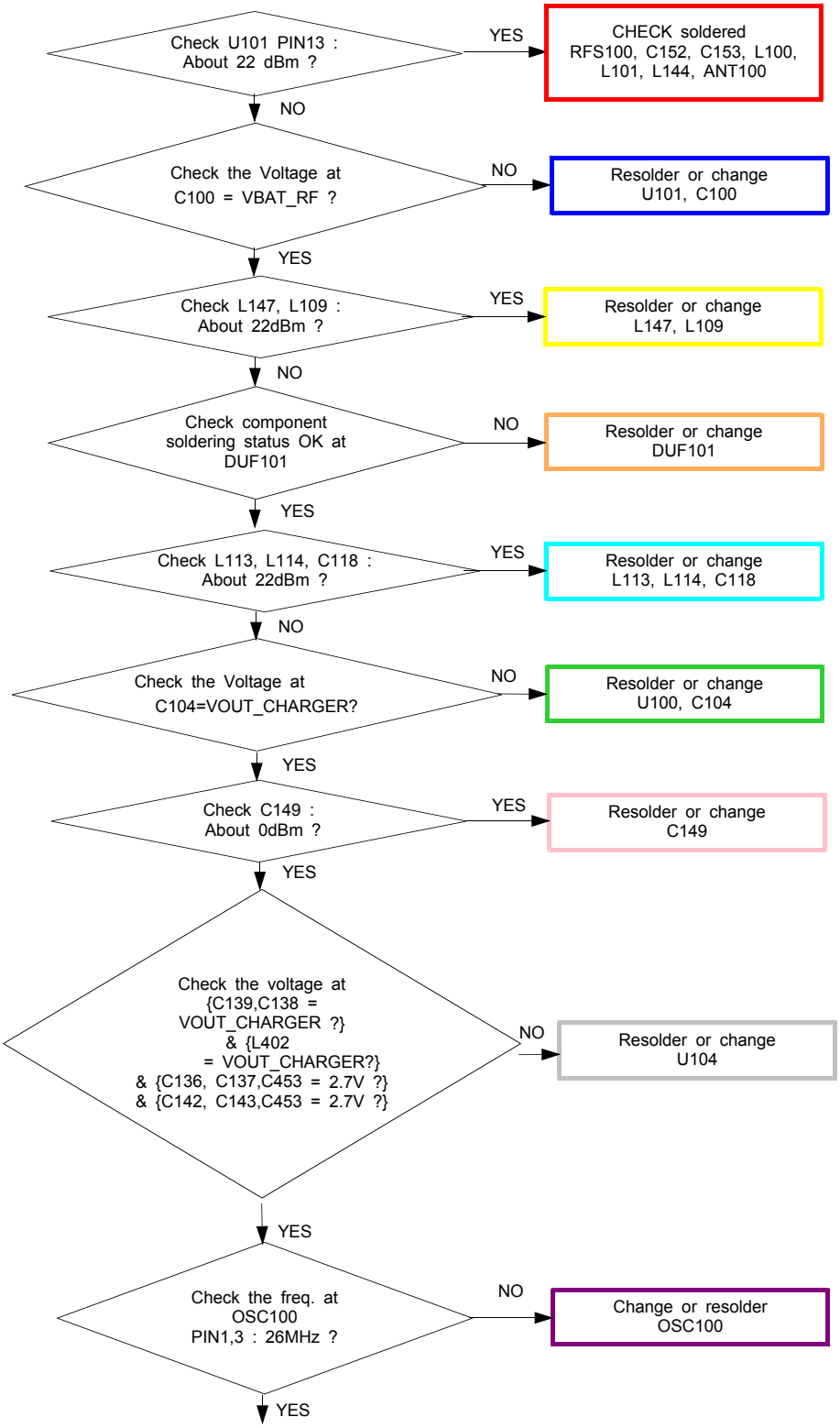
8-3-22. WCDMA BAND1 TX

CONTINOUS TX ON CONDITION
TX POWER DAC:14500 CODE APPLIED
WCDMA Band1 CH : 10700
RBW : 100KHz
VBW : 100KHz
SPAN : 10MHz
REF LEV. : 10dBm
ATT. : 20dB


Check U101 PIN13 : About 22 dBm ?
YES
CHECK soldered RFS100, C152, C153, L100, L101, L144, ANT100
NO
Check the Voltage at C100 = VBAT_RF ?
NO
Resolder or change U101, C100
YES
Check L147, L109 : About 22dBm ?
YES
Resolder or change L147, L109
NO
Check component soldering status OK at DUF101
NO
Resolder or change DUF101
YES
Check L113, L114, C118 : About 22dBm ?
YES
Resolder or change L113, L114, C118
NO
Check the Voltage at C104=VOUT_CHARGER?
NO
Resolder or change U100, C104
YES
Check C149 : About 0dBm ?
YES
Resolder or change C149
YES
Check the voltage at {C139,C138 = VOUT_CHARGER ?} & {L402 = VOUT_CHARGER?} & {C136, C137,C453 = 2.7V ?} & {C142, C143,C453 = 2.7V ?}
NO
Resolder or change U104
YES
Check the freq. at OSC100 PIN1,3 : 26MHz ?
NO
Change or resolder OSC100
YES

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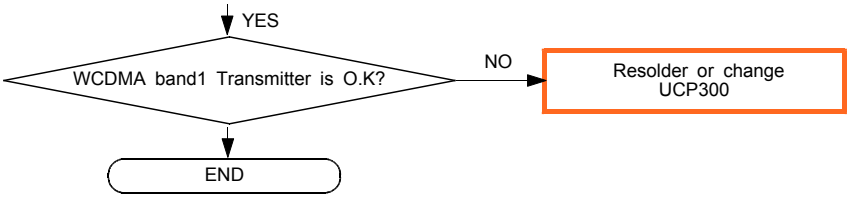
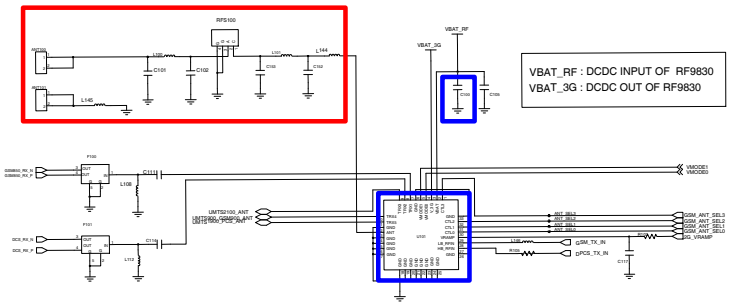
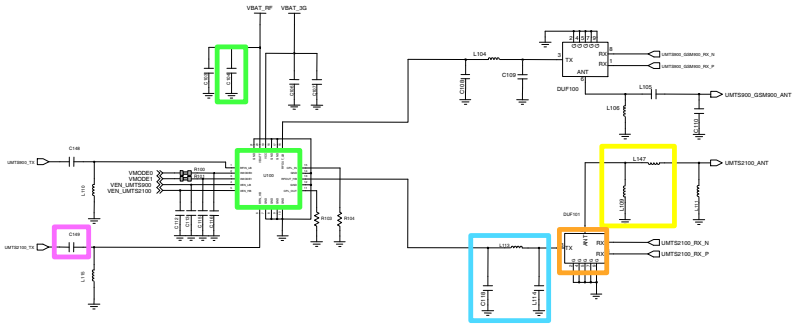
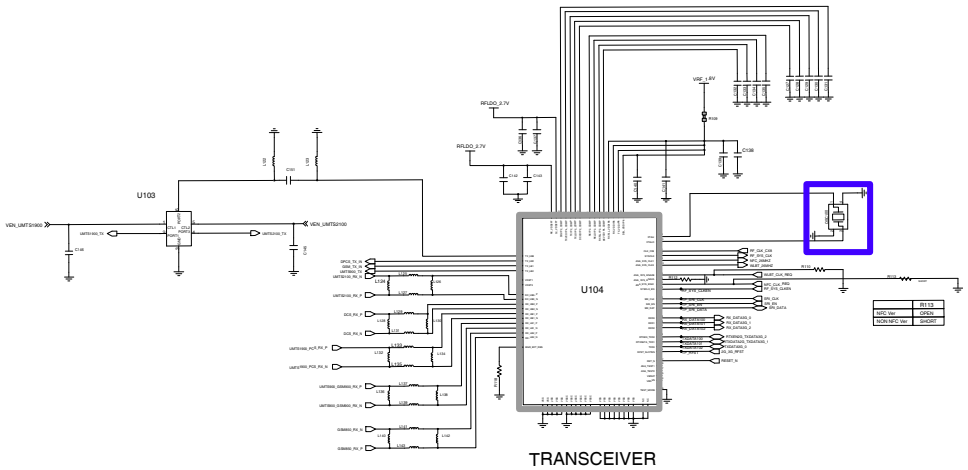




2G TX MODULE



3G DUAL PA(EU BAN1, 8)



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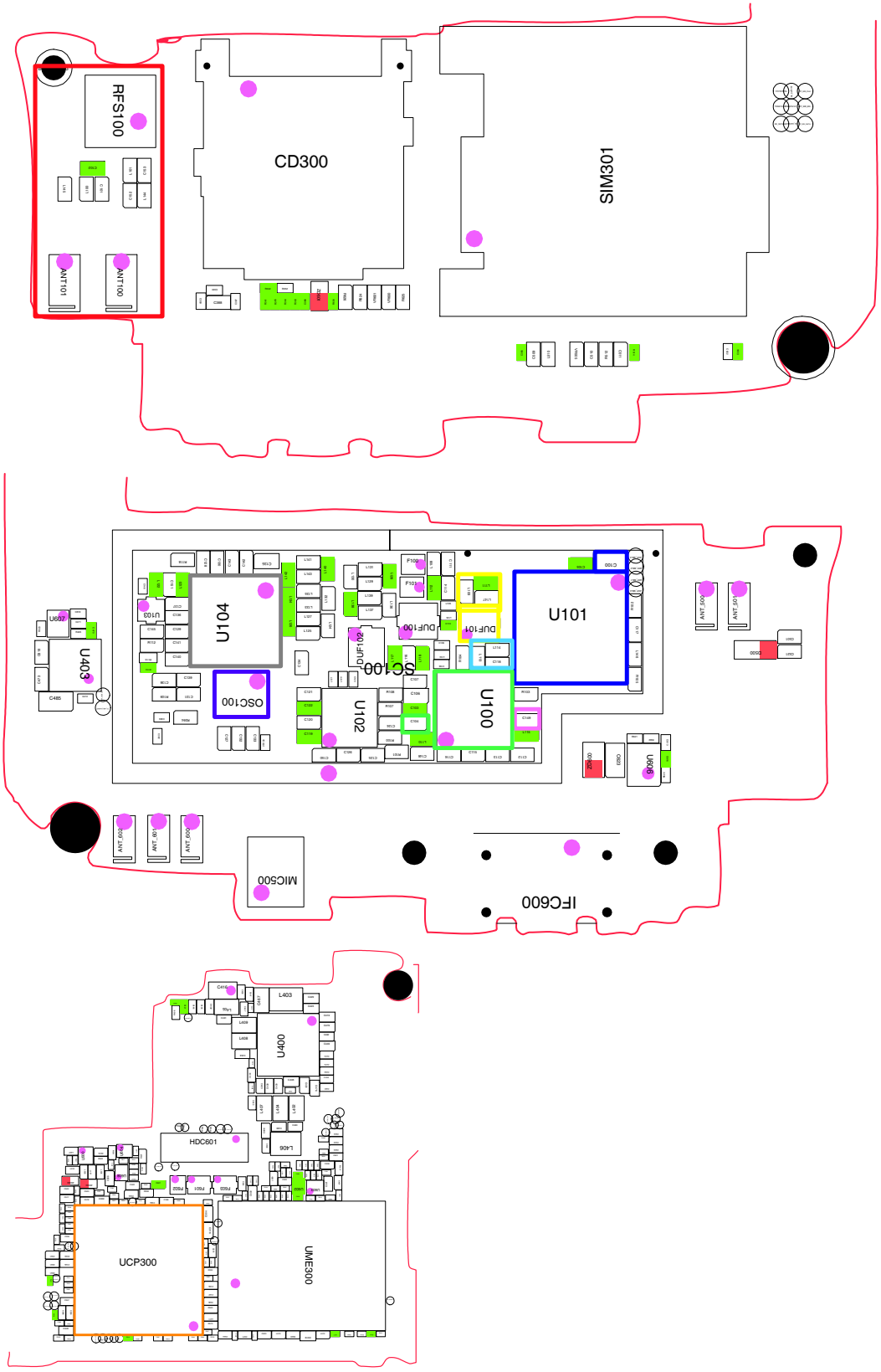

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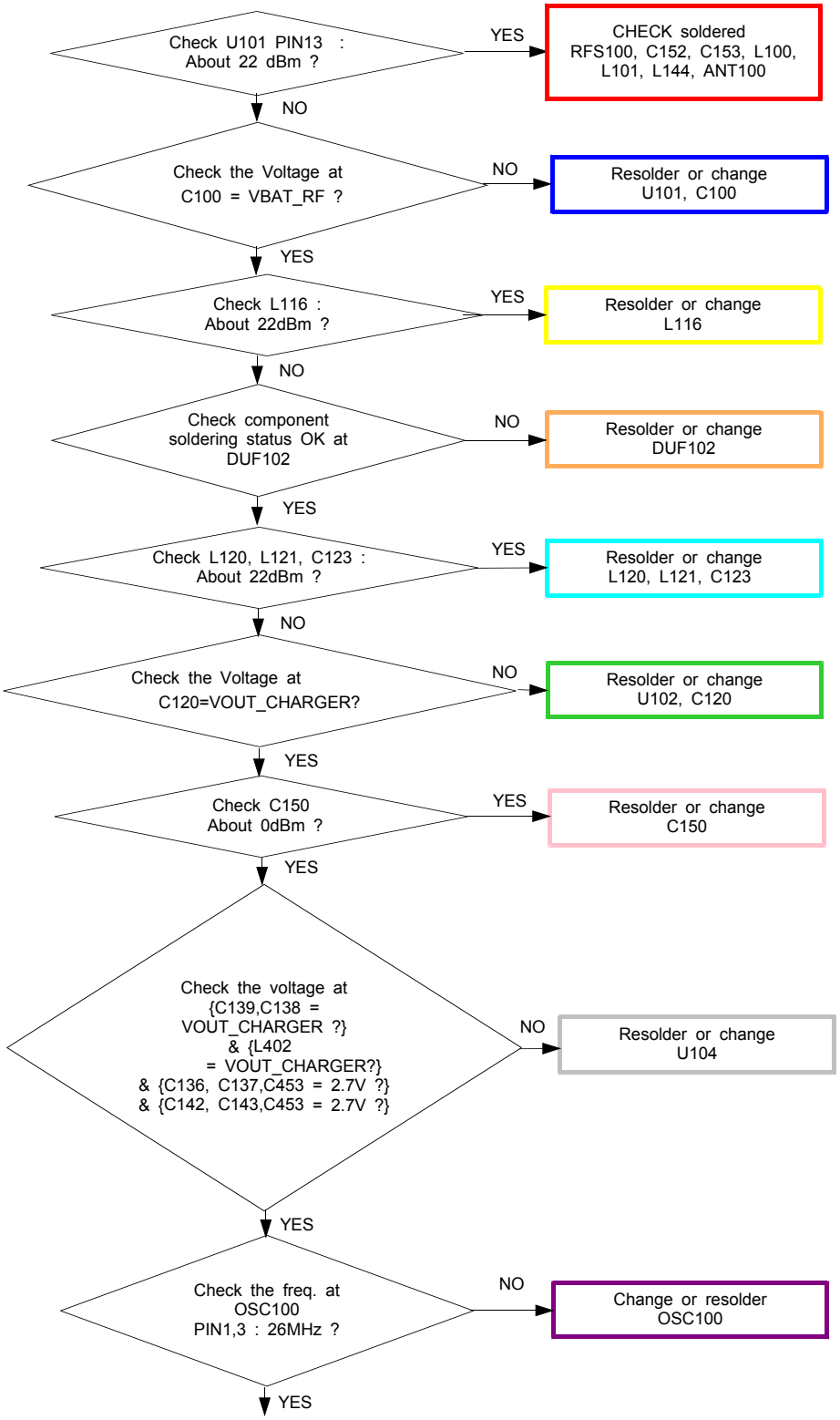
8-3-23. WCDMA BAND2 TX


Check U101 PIN13 : About 22 dBm ?
YES
CHECK soldered RFS100, C152, C153, L100, L101, L144, ANT100
NO
Check the Voltage at C100 = VBAT_RF ?
NO
Resolder or change U101, C100
YES
Check L116 : About 22dBm ?
YES
Resolder or change L116
NO
Check component soldering status OK at DUF102
NO
Resolder or change DUF102
YES
Check L120, L121, C123 : About 22dBm ?
YES
Resolder or change L120, L121, C123
NO
Check the Voltage at C120=VOUT_CHARGER?
NO
Resolder or change U102, C120
YES
Check C150 About 0dBm ?
YES
Resolder or change C150
YES
Check the voltage at {C139,C138 = VOUT_CHARGER ?} & {L402 = VOUT_CHARGER?} & {C136, C137,C453 = 2.7V ?} & {C142, C143,C453 = 2.7V ?}
NO
Resolder or change U104
YES
Check the freq. at OSC100 PIN1,3 : 26MHz ?
NO
Change or resolder OSC100
YES

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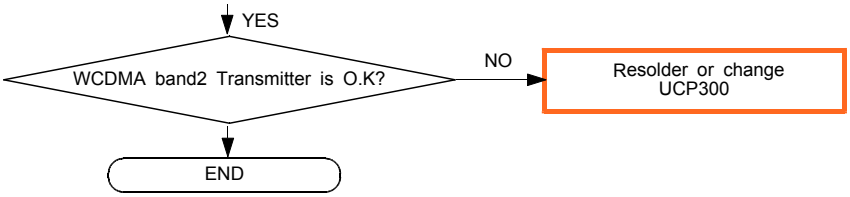
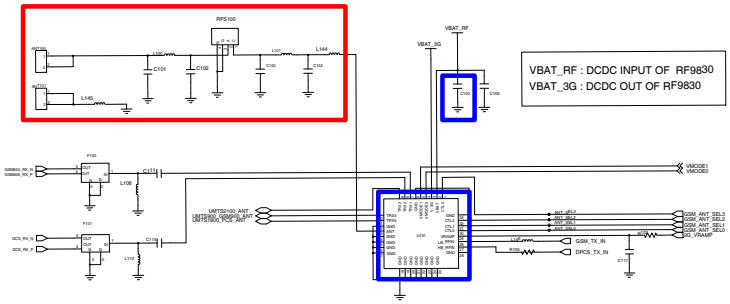
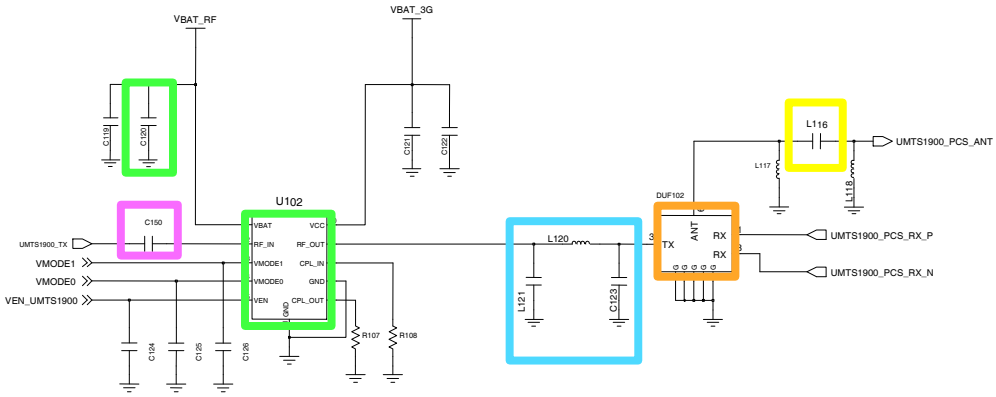
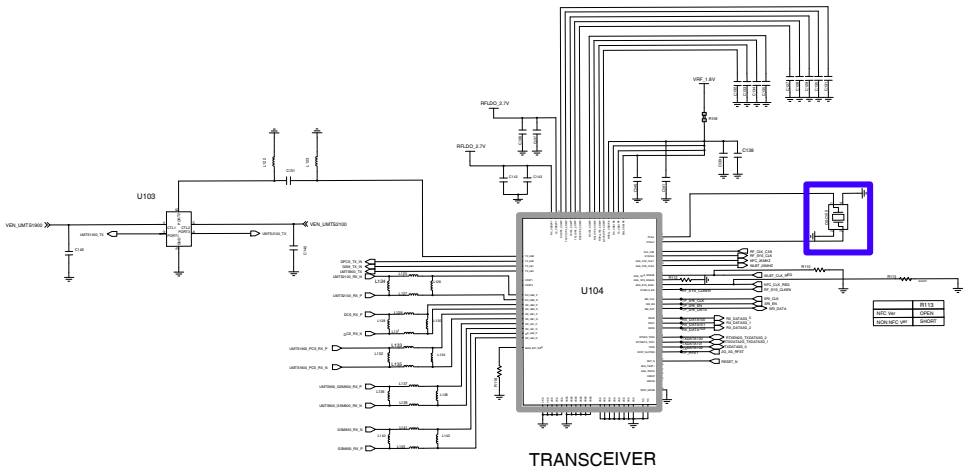




2G TX MODULE



3G PA(LA BAND2)



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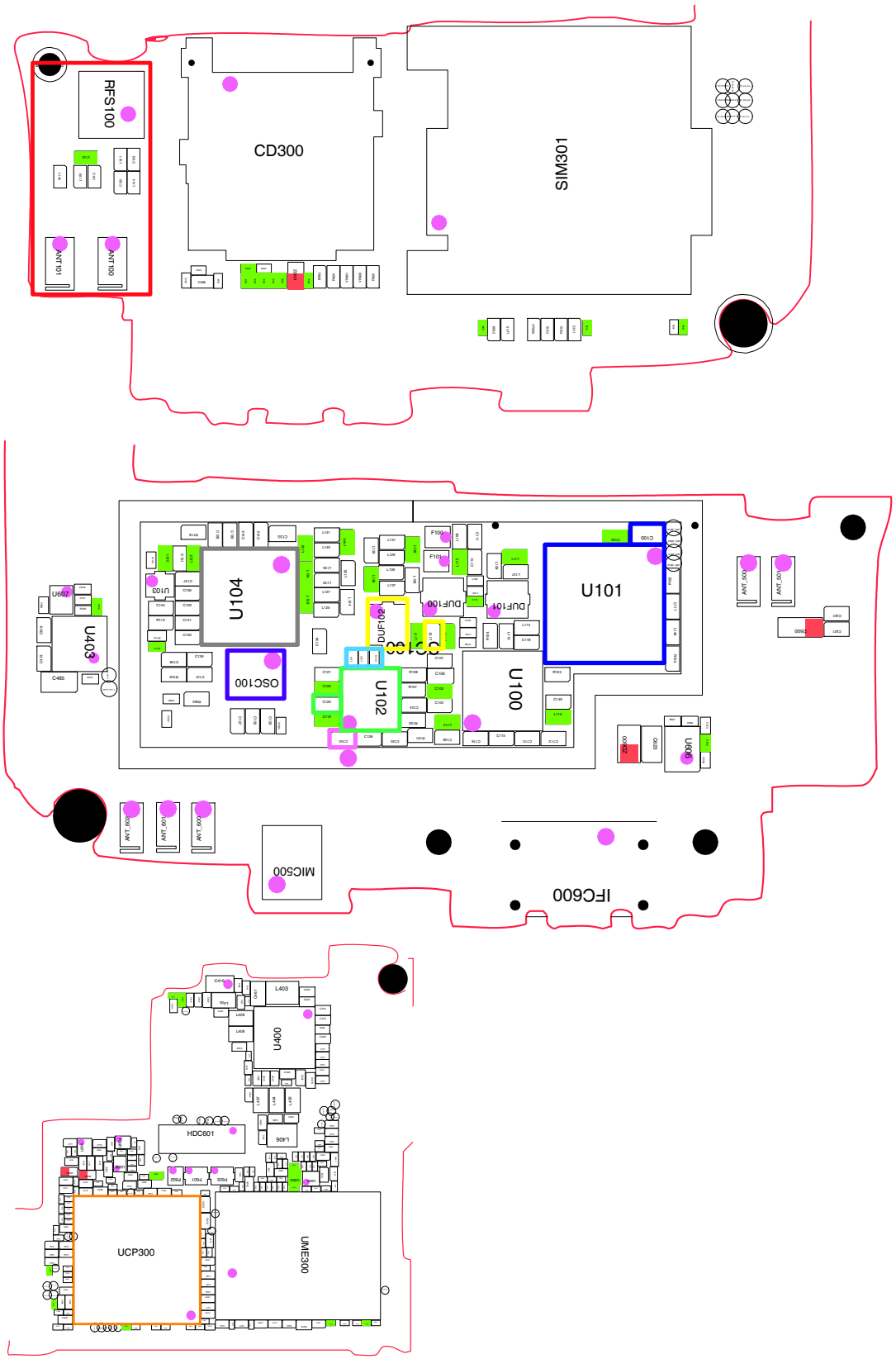

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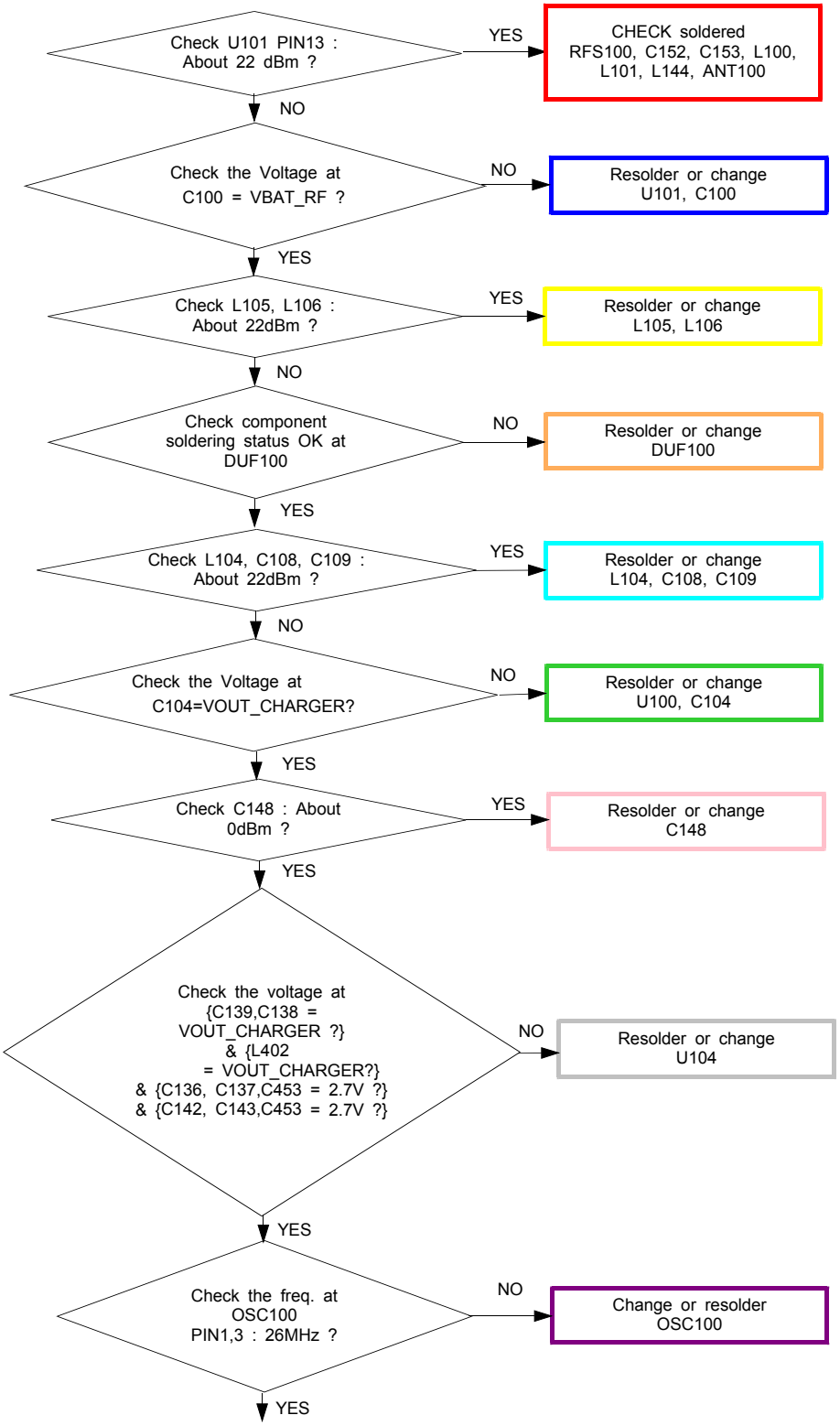
8-3-24. WCDMA BAND8 TX


Check U101 PIN13 : About 22 dBm ?
YES
CHECK soldered RFS100, C152, C153, L100, L101, L144, ANT100
NO
Check the Voltage at C100 = VBAT_RF ?
NO
Resolder or change U101, C100
YES
Check L105, L106 : About 22dBm ?
YES
Resolder or change L105, L106
NO
Check component soldering status OK at DUF100
NO
Resolder or change DUF100
YES
Check L104, C108, C109 : About 22dBm ?
YES
Resolder or change L104, C108, C109
NO
Check the Voltage at C104=VOUT_CHARGER?
NO
Resolder or change U100, C104
YES
Check C148 : About 0dBm ?
YES
Resolder or change C148
YES
Check the voltage at {C139,C138 = VOUT_CHARGER ?} & {L402 = VOUT_CHARGER?} & {C136, C137,C453 = 2.7V ?} & {C142, C143,C453 = 2.7V ?}
NO
Resolder or change U104
YES
Check the freq. at OSC100 PIN1,3 : 26MHz ?
NO
Change or resolder OSC100
YES

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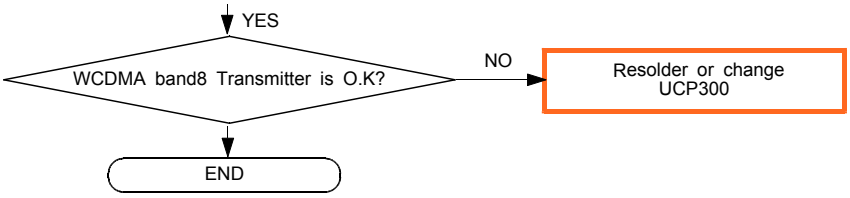
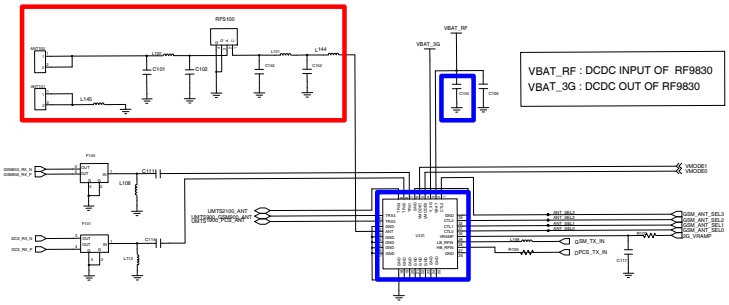
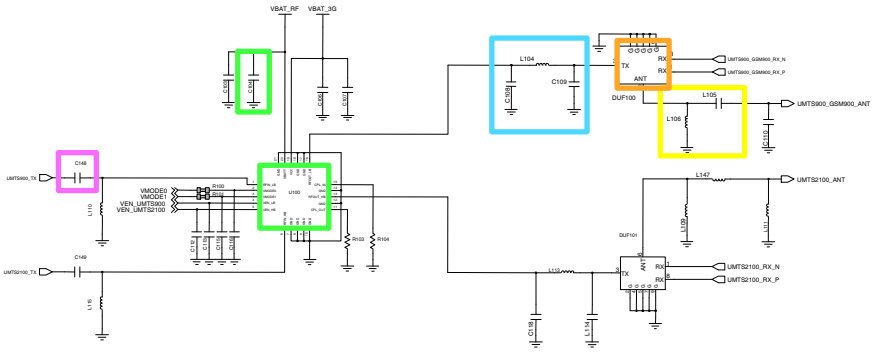
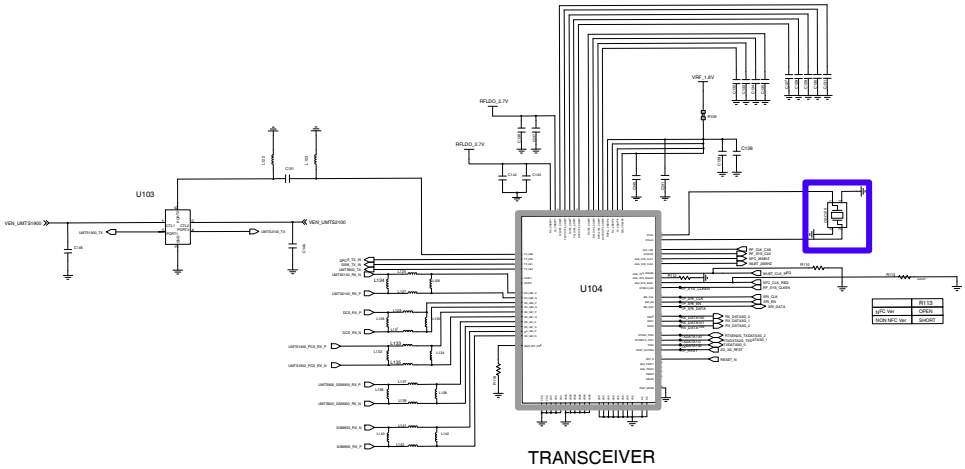




2G TX MODULE



3G DUAL PA(EU BAN1, 8)



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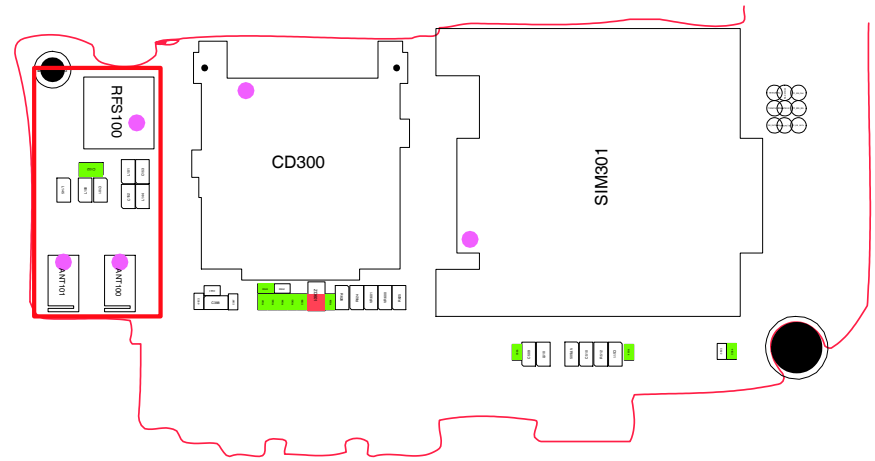

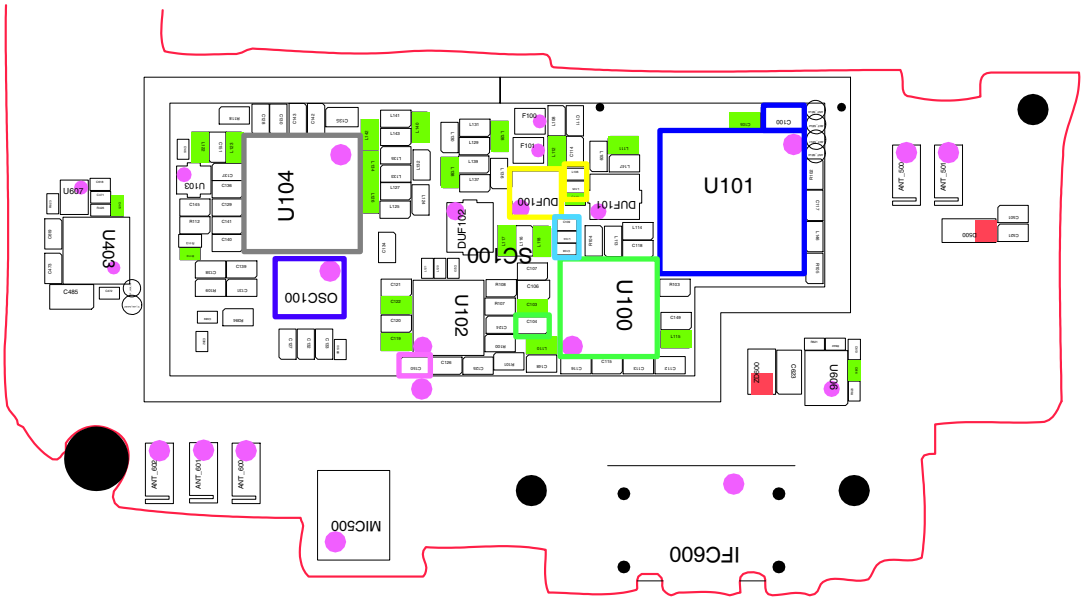

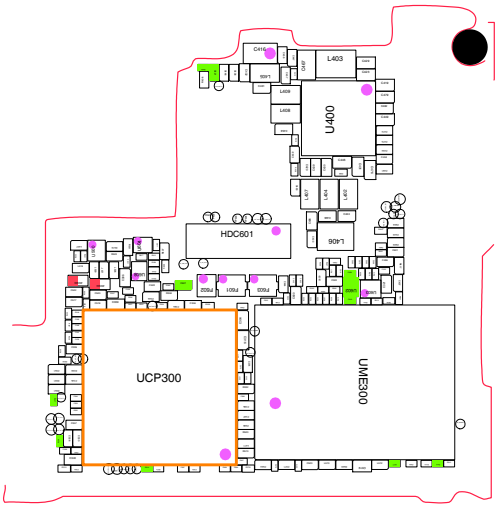

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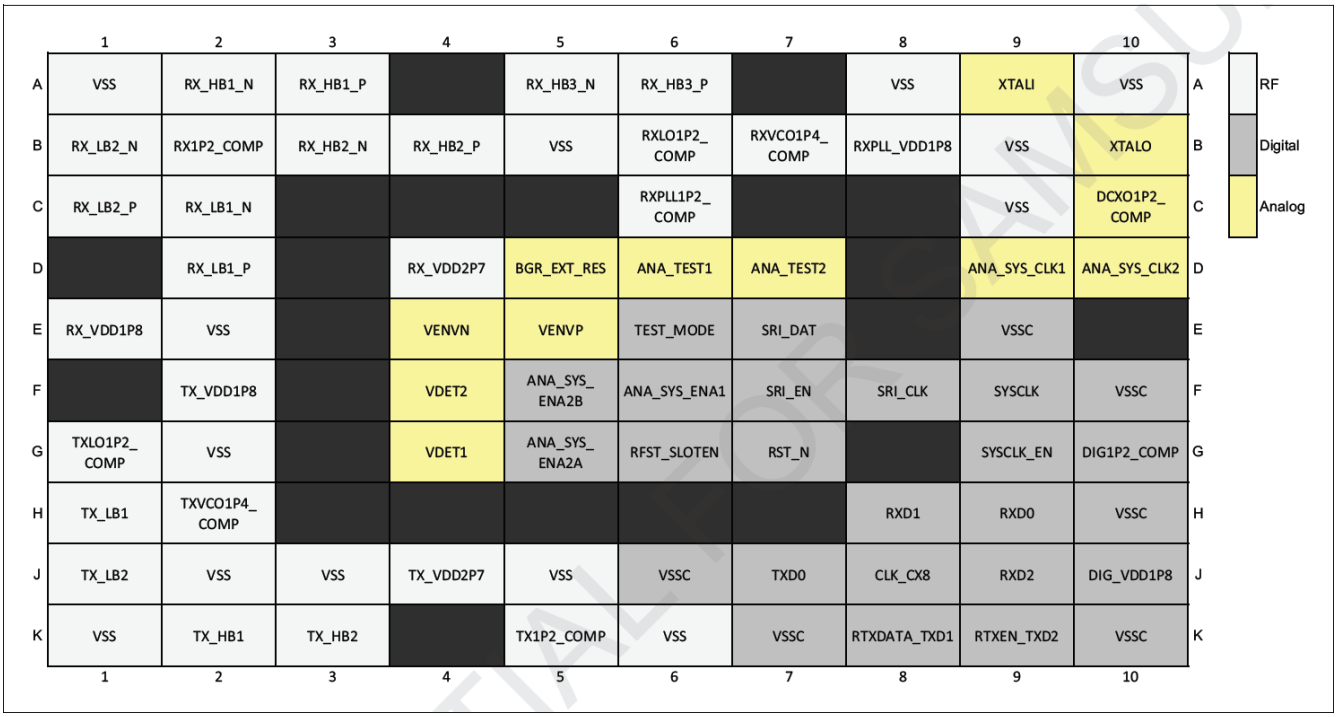
8-4. Service Schematics

U104



	1	2	3	4	5	6	7	8	9	10	
A	VSS	RX_HB1_N	RX_HB1_P		RX_HB3_N	RX_HB3_P		VSS	XTALI	VSS	A
B	RX_LB2_N	RX1P2_COMP	RX_HB2_N	RX_HB2_P	VSS	RXLO1P2_ COMP	RXVCO1P4_ COMP	RXPLL_VDD1P8	VSS	XTALO	B
C	RX_LB2_P	RX_LB1_N				RXPLL1P2_ COMP			VSS	DCXO1P2_ COMP	C
D		RX_LB1_P		RX_VDD2P7	BGR_EXT_RES	ANA_TEST1	ANA_TEST2		ANA_SYS_CLK1	ANA_SYS_CLK2	D
E	RX_VDD1P8	VSS		VENVN	VENVP	TEST_MODE	SRI_DAT		VSSC		E
F		TX_VDD1P8		VDET2	ANA_SYS_ ENA2B	ANA_SYS_ENA1	SRI_EN	SRI_CLK	SYSCLK	VSSC	F
G	TXLO1P2_ COMP	VSS		VDET1	ANA_SYS_ ENA2A	RFST_SLOTEN	RST_N		SYSCLK_EN	DIG1P2_COMP	G
H	TX_LB1	TXVCO1P4_ COMP						RXD1	RXD0	VSSC	H
J	TX_LB2	VSS	VSS	TX_VDD2P7	VSS	VSSC	TXD0	CLK_CX8	RXD2	DIG_VDD1P8	J
K	VSS	TX_HB1	TX_HB2		TX1P2_COMP	VSS	VSSC	RTXDATA_TXD1	RTXEN_TXD2	VSSC	K
	1	2	3	4	5	6	7	8	9	10	

RF
Digital
Analog

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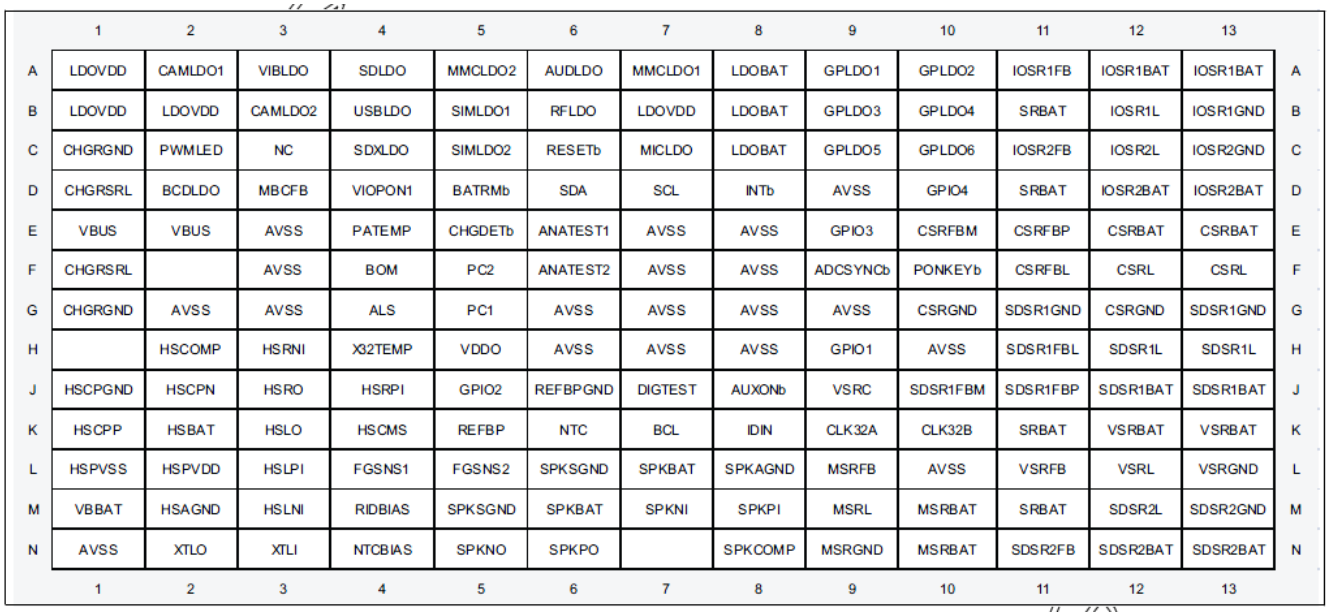
U400



	1	2	3	4	5	6	7	8	9	10	11	12	13	
A	LDOVDD	CAMLDO1	VIBLDO	SDLDO	MMCLDO2	AUDLDO	MMCLDO1	LDOBAT	GPLDO1	GPLDO2	IOSR1FB	IOSR1BAT	IOSR1BAT	A
B	LDOVDD	LDOVDD	CAMLDO2	USBLDO	SIMLDO1	RFLDO	LDOVDD	LDOBAT	GPLDO3	GPLDO4	SRBAT	IOSR1L	IOSR1GND	B
C	CHGRGND	PWMLED	NC	SDXLDO	SIMLDO2	RESETb	MICLDO	LDOBAT	GPLDO5	GPLDO6	IOSR2FB	IOSR2L	IOSR2GND	C
D	CHGRSRL	BCDLDO	MBCFB	VIOPON1	BATRMb	SDA	SCL	INTb	AVSS	GPIO4	SRBAT	IOSR2BAT	IOSR2BAT	D
E	VBUS	VBUS	AVSS	PATEMP	CHGDETb	ANATEST1	AVSS	AVSS	GPIO3	CSRFBM	CSRFBP	CSRBAT	CSRBAT	E
F	CHGRSRL		AVSS	BOM	PC2	ANATEST2	AVSS	AVSS	ADCSYNCb	PONKEYb	CSRFBL	CSRL	CSRL	F
G	CHGRGND	AVSS	AVSS	ALS	PC1	AVSS	AVSS	AVSS	AVSS	CSRGND	SDSR1GND	CSRGND	SDSR1GND	G
H		HSCOMP	HSRNI	X32TEMP	VDDO	AVSS	AVSS	AVSS	GPIO1	AVSS	SDSR1FBL	SDSR1L	SDSR1L	H
J	HSCPGND	HSCPN	HSRO	HSRPI	GPIO2	REFBPGND	DIGTEST	AUXONb	VSRC	SDSR1FBM	SDSR1FBP	SDSR1BAT	SDSR1BAT	J
K	HSCPP	HSBAT	HSLO	HSCMS	REFBP	NTC	BCL	IDIN	CLK32A	CLK32B	SRBAT	VSRBAT	VSRBAT	K
L	HSPVSS	HSPVDD	HSLPI	FGSNS1	FGSNS2	SPKSGND	SPKBAT	SPKAGND	MSRFB	AVSS	VSRFB	VSRL	VSRGND	L
M	VBBAT	HSAGND	HSLNI	RIDBIAS	SPKSGND	SPKBAT	SPKNI	SPKPI	MSRL	MSRBAT	SRBAT	SDSR2L	SDSR2GND	M
N	AVSS	XTLO	XTLI	NTCBIAS	SPKNO	SPKPO		SPKCOMP	MSRGND	MSRBAT	SDSR2FB	SDSR2BAT	SDSR2BAT	N
	1	2	3	4	5	6	7	8	9	10	11	12	13	

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UCP300_UP

4.2 LPDDR2 SDRAM PACKAGE BALLOUT

216Ball FBGA

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
A	NC	VSS_ab	VDD2_ab	DQ30_a	DQ29_a	VSSQ_a	DQ26_a	DQ25_a	VSSQ_a	$\overline{DQS3}$_a	VSSQ_a	DQ14_a	DQ13_a	VSS_a	VDD1_a	VDD2_a	DQ11_a	DQ10_a	DQ9_a	DQS1_a	DM1_a	VDDQ_a	DQS0_a	DQ7_a	DQ6_a	DQ4_a	DQ3_a	VSS_ab	NC
B	VSSQ_b	NC	DQ31_a	VDDQ_a	DQ28_a	DQ27_a	VDDQ_a	DQ24_a	VDDQ_a	DQS3_a	DM3_a	DQ15_a	VDDQ_a	VSSQ_a	Vref(DQ)_a	VDD2_a	DQ12_a	VDDQ_a	DQ8_a	$\overline{DQS1}$_a	VSSQ_a	DM0_a	$\overline{DQS0}$_a	VSSQ_a	VDDQ_a	DQ5_a	DQ2_a	NC	VSSQ_a
C	VDD1_ab	DQ16_b																										VDD1_a	VDD2_ab
D	DQ17_b	VDDQ_b																										DQ1_a	VDDQ_a
E	DQ18_b	DQ19_b																										VSSQ_a	DQ0_a
F	VSSQ_b	DQ20_b																										DM2_a	VDDQ_a
G	DQ21_b	VDDQ_b																										DQS2_a	$\overline{DQS2}$_a
H	DQ22_b	DQ23_b																										VSSQ_a	DQ23_a
J	VSSQ_b	VDDQ_b																										VDDQ_a	DQ22_a
K	$\overline{DQS2}$_b	DQS2_b																										DQ20_a	DQ21_a
L	DM2_b	DQ0_b																										DQ19_a	VSSQ_a
M	DQ1_b	VSSQ_b																										VDDQ_a	DQ18_a
N	DQ2_b	VDD1_b																										DQ16_a	DQ17_a
P	VSS_b	VSS_b																										VDD2_b	VDD1_b
R	VDD1_b	Vref(DQ)_b																										VSS_b	CA0_b
T	VDD2_b	VDD2_b																										VDDCA_b	CA1_b
U	VDDQ_b	DQ3_b																										Vref(CA)_b	CA2_b
V	DQ4_b	VSSQ_b																										VSSCA_b	CA3_b
W	DQ6_b	DQ5_b																										CA4_b	NC
Y	VDDQ_b	DQ7_b																										$\overline{CS}$_b	NC
AA	DQS0_b	$\overline{DQS0}$_b																										VSSCA_b	CKE_b
AB	DM0_b	VSSQ_b																										CK_b	$\overline{CK}$_b
AC	VDDQ_b	DM1_b																										VDDCA_b	CA5_b
AD	$\overline{DQS1}$_b	DQS1_b																										CA7_b	CA6_b
AE	DQ8_b	VSSQ_b																										CA8_b	VDDCA_b
AF	DQ9_b	VDDQ_b																										VSSCA_b	CA9_b
AG	DQ10_b	DQ11_b																										VDD2_ab	ZQ_b
AH	VSSQ_b	VDD1_ab	VDD2_ab	DQ13_b	VSSQ_b	DQ15_b	DM3_b	DQS3_b	VDDQ_b	DQ26_b	DQ27_b	VDDQ_b	DQ30_b	VSSQ_b	VDD2_a	Vref(CA)_a	CA9_a	VSSCA_a	CA7_a	CA6_a	$\overline{CK}$_a	VDDCA_a	CKE_a	$\overline{CS}$_a	CA3_a	CA2_a	CA1_a	VDD1_ab	VSSCA_a
AJ	NC	VSS_ab	DQ12_b	VDDQ_b	DQ14_b	VDDQ_b	VSSQ_b	$\overline{DQS3}$_b	DQ24_b	DQ25_b	VSSQ_b	DQ28_b	DQ29_b	DQ31_b	VDD1_a	VSS_a	ZQ_a	CA8_a	VDDCA_a	CA5_a	CK_a	VSSCA_a	NC	NC	CA4_a	VDDCA_a	CA0_a	VSS_ab	NC

[Top View]

	Channel A		Ground
	Channel B		ZQ
	Power		NC/DNU

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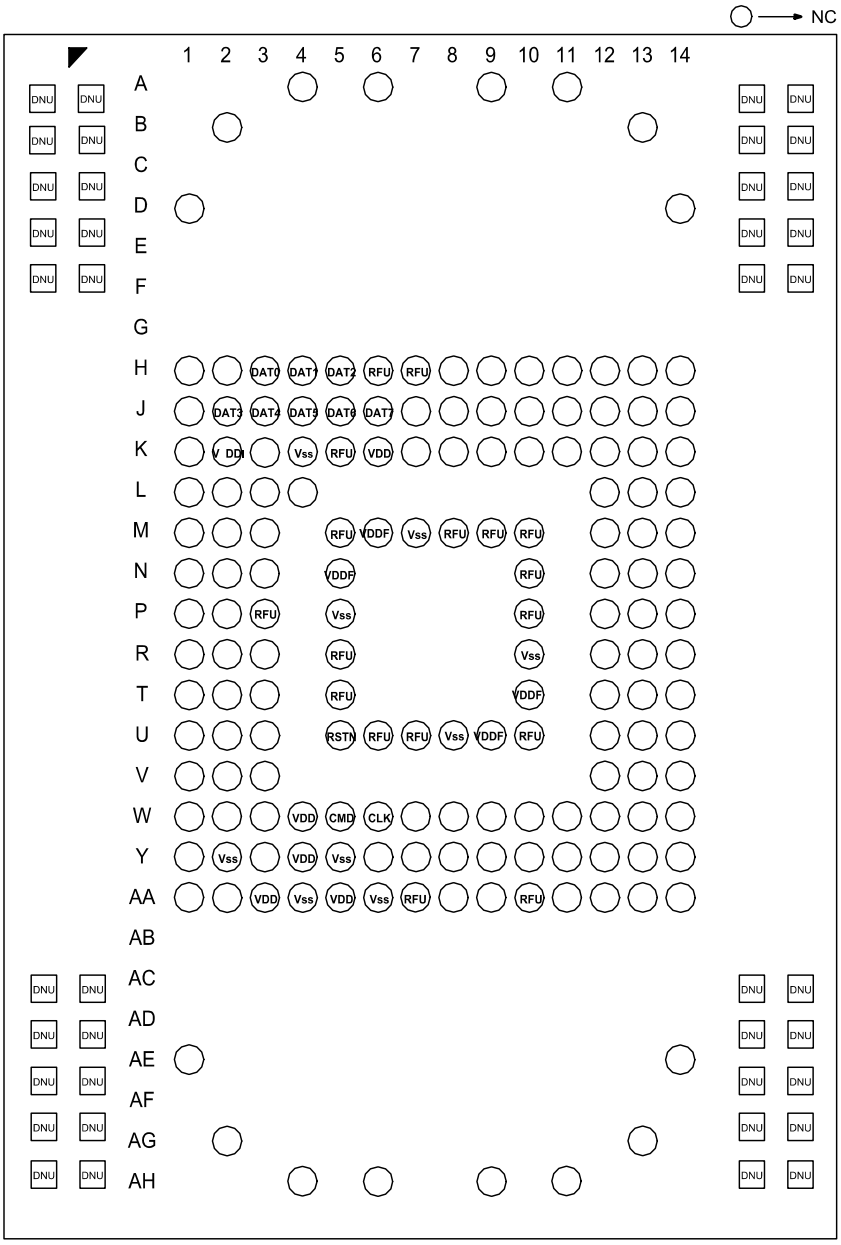
UME300

[Table 2] 169 Ball Information

Pin NO	Name	Pin NO	Name
K6	VDD	AA5	VDD
T10	VDDF	W4	VDD
K2	VDDI	Y4	VDD
R10	Vss	AA3	VDD
W5	CMD	U9	VDDF
W6	CLK	M6	VDDF
H3	DAT0	N5	VDDF
H4	DAT1	U8	Vss
H5	DAT2	M7	Vss
J2	DAT3	AA6	Vss
J3	DAT4	P5	Vss
J4	DAT5	Y5	Vss
J5	DAT6	K4	Vss
J6	DAT7	Y2	Vss
H6	RFU	AA4	Vss
H7	RFU	U5	RSTN
K5	RFU		
M5	RFU		
M8	RFU		
M9	RFU		
M10	RFU		
N10	RFU		
P3	RFU		
P10	RFU		
R5	RFU		
T5	RFU		
U6	RFU		
U7	RFU		
U10	RFU		
AA7	RFU		
AA10	RFU		


NC
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H J K L M N P R T U V W Y AA AB AC AD AE AF AG AH
DNU
DAT0 DAT1 DAT2 RFU RFU
DAT3 DAT4 DAT5 DAT6 DAT7
V_DDI Vss RFU VDD
RFU VDDF Vss RFU RFU RFU
VDDF RFU
RFU Vss RFU
RFU Vss
RFU VDDF
RSTN RFU RFU Vss VDDF RFU
VDD CMD CLK
Vss VDD Vss
VDD Vss VDD Vss RFU RFU

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